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ABSTRACT

Drawn from the proceedings of the 1985 Western College Reading and Learning Association, as well as articles submitted for juried selection, the papers in this journal issue focus on reading, learning assistance, developmental education, and tutorial services at the college level. Titles and authors of the papers include (1) "Reaching New Heights: WCRLA Presidential Address" (Carole Bogue); (2) "Challenges of Demographic Change" (Martha Romero); (3) "Tetrahedral Models of Learning: Application to College Reading" (Sherrie L. Nist); (4) "PLAE: A Strategy Regulation Model for Successful Independent Learning" (Michelle L. Simpson and Sherrie L. Nist); (5) "Activating Metacognitive Reading and Study Strategies in College Students" (Charlene C. Swanson); (6) "Field-Testing a Piagetian Approach to Improving College Reading Abilities" (Linda Ann Lee); (7) "Critical Thinking: Theories and Strategies in Reading, English, and Mathematics" (Roberta Yellott, Lawrence S. Dilks, Jeannette Dick, Cheryl L. Ware) (8) "The Value of Main Idea Clues for Use with College Textbooks" (Patrick J. Ashton, Michael F. O'Hear, Valli E. Pherson); (9) "Benchmark to Academic Literacy: Criterion Reference Testing in College Reading" (Brenda D. Smith and Joan M. Elifson); (10) "Support for Reading and Writing as Shared Developmental Processes" (Janice Lewis); (11) "Notemaking: More Than a Storehouse of Data" (Stephen O'Neill and Marlene G. Hynes); (12) "Listening Instruction: Awareness, Identification, and Practice" (Judy Kilpatrick); (13) "An Added Responsibility: Teaching Prospective and Active Teachers How to Teach Study Skills" (Kathy H. Carpenter); (14) "Teaching Reading Through Content Areas: Preservice Teachers' Attitudinal Change" (George Cabrera); (15) "Communicative Competence: The Student in Culture Shock" (Maureen S. Bogdanowicz); (16) "Win-Win Potential for Retention: Students Assisting Students to Succeed" (Gladys R. Shaw and Chris M. Mendoza); (17) "Success Sessions" (Walter P. Lazdowski); (18) "Learning Difficulties and Disabilities: Helping the Adult Learner to Cope" (Becky Johnen and Dale Brown); (19) "Type Preferences of Teachers and Students in Developmental Studies" (Donna S. Wood); (20) "Faculty Perceptions of a University Program for Native American Students" (V. Con Osborne and A. Garr Cranney); (21) "A Support Program for Academically Dismissed Students" (Sirkka Gudan and Donna Sudik); and (22) "The High Risk Student and the Integrated Course" (Mary E. Denman). (HOD)

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REACHING NEW HEIGHTS: WCRLA PRESIDENTIAL ADDRESS

Carole Bogue
San Jose City College

With the growing number of underprepared students entering today's colleges and universities, there is an urgent need for post-secondary institutions to recognize their responsibility to these students. The programs and special services offered them, however, are frequently criticized for their existence on college campuses. What can developmental educators do to gain support for these special offerings? What new heights should they reach and how?

In order to answer these critical questions, it is helpful to gain some historical perspective. When reviewing the literature examining learning assistance and developmental education, one learns that groups of students identified as underprepared for college coursework have been enrolling in colleges for many years (Cross, 1971, 1976; Maxwell, 1979). In addressing this issue, Brier (1984) reports that sources such as institutional records and archives, student publications, and alumni collections—including those from Yale, Cornell, and Vassar—verify the enrollment of underprepared students in American colleges as early as the nineteenth century. Their admittance is attributed to the need for generation of revenue, to over-expansion of higher education vis-a-vis secondary education, to expressed desire by educators to provide educational opportunity to a wider range of students, and to fluctuating prerequisites which tended to be institution-specific, lessening the opportunity for adequate preparation. Brier also notes that colleges considered it mandatory to implement programs or courses to meet the special needs of underprepared students; therefore,nineteenth century post-secondary institutions offered pre-college courses and tutoring. Evidence indicates, however, that the presence of these students and programs on the college campuses did cause institutional embarassment as well as public controversy.

Delivered at the Eighteenth Annual Conference of the Western College Reading and Learning Association, Denver, Colorado, March 29, 1985.

Clearly, not much has changed. Inadequately prepared students still enroll in higher educational institutions. It is apparent, however, that the number of institutions and the diversity of students enrolling in them have increased, and that the range of entering students has expanded; consequently, a greater percentage of students enrolling in today's institutions is now designated under-prepared. In a recent study conducted by Roueche, Baker, and Roueche (1984), in which every two- and four-year institution of higher education in the United States was asked to report on courses and programs designed for inadequately prepared students, it is reported that an increasing number of underprepared students is entering every type of college and university. Furthermore, it is noted that many of these students are so deficient in basic skills that success in college level coursework is highly unlikely without intervention. In the first chapter of their study, they write, "It is not uncommon today to find 30-40 percent of entering freshmen reading below the seventh grade level" (p. 1). Even many students currently graduating at the top of their high school classes are found to be underprepared for college. Lanham (1982) refers to this distrubing problem when noting that approximately half of the 4,000 students who enter UCLA as freshmen—the top 12 percent of all California high school students—currently fail the English proficiency examination.

Programs are implemented at every type of institution today to assist underprepared students. Referring to their 1984 study, Roueche, Baker, and Roueche report, "Of the returned surveys, 1,452 were usable; of this number, 160 institutions reported that they did not operate a special program, developmental courses or programs, or had not developed alternatives to support low-achieving student" (p. 24). In fact, it is concluded by these researchers that the survival of most American colleges and universities is related to their ability to assist poorly prepared students, who now comprise nearly half the freshman population.

However, as in the nineteenth century, the presence of underprepared students and programs designed to assist them causes unrest for many in academia as well as for the tax-paying public. The dilemma hasn't changed; it has simply increased in magnitude.

In order to brighten the future and consequently alleviate current concerns regarding the admission of underprepared students, developmental educators can and should take certain steps to increase acceptance for preparing students on college campuses to succeed in coursework. Since few programs are perfect, they might first consider ways to improve the quality or effectiveness of the programs presently offered. In the past five to ten years, researchers have reported some extremely interesting findings which, given sufficient

analysis, can be beneficially applied to many instructional programs.

A good example of such research are instantiation studies.The instantiation hypothesis was derived from the schema-theoretic view of reading comprehension, which claims that meaning is not present in the text; readers use their prior knowledge to interact with the text and thereby construct its meaning (Adams and Collins, 1977). This hypothesis suggests that as an individual reads, he/she uses the context of a sentence to infer particular terms for the more general terms in a sentence. These particular terms or instantiations are stored in memory and are later used to represent the meaning of the general terms in context. Individuals, therefore, make instantiations as they read (Dreher, 1982). As Spencer (1979) explains,

> To instantiate, a reader must very often perform a number of mental tasks other than merely correlate the word with a concept. Commonly, he must relate the word(s) to a larger frame of reference and bring his/her own knowledge to the text—inferring the motivations of characters because they react like people he knows or can imagine, or selecting a meaning of a word that would fit the context (p. 44).

Drawing from results of studies like those on instantiation, developmental educators might prepare or select material to better aid student in gaining comprehension skills.

At the same time, they might ecamine the material prepared by Arthur Whimbey who has carefully reviewed the literature in the area of comprehension, problem solving/critical thinking, and cognitive style. In describing good comprehenders, Whimbey (1984) points out that they have a cognitive style different from that of poor comprehenders; they are more concerned with accuracy (metacognitive monitoring); they have learned to work through material step-by-step, and they are mentally active in spelling out relationships. In *Problem Solving and Comprehension: A Short Course in Analytical Reasoning* (Whimbey and Lochhead, 1982), verbal analogies are included to offer students practice in seeing relationships. In these exercises and others, Whimbey and Lochhead directly applied the results of research. These authors created exercises which require application of additional problem solving/critical thinking skills, some of which call for a higher level of abstraction than that demanded by typical comprehension material. Research has indicated, however, that good comprehenders can and do perform the type of operations required by Whimbey and Lochhead's exercises. It seems logical to assume then that instruction in comprehension should lead to problem solving/critical thinking activity as Whimbey, Lochhead and others sug-

gest. In fact Miles (1984) recommends that developmental educators focus not only on students' ability to read, write and compute at a minimal level, but that they address the more complex skills of problem solving, reasoning, conceptualizing and analyzing. He asserts, "If ever develomental educators had an invitation to lead, it lies here" (p. 9).

Developmental educators might also look beyond educational reasearch to that of industry. *In Search of Excellence* (Peters and Waterman, 1982) offers several practical ideas that could enhance developmental programs in today's colleges. For example, the suggestion from the corporate world to stimulate extraordinary effort on the part of ordinary people by creating systems for making them members of winning teams can be directly applied to developmental education. The goal of making winners out of ordinary people is indeed the purpose of developmental education. As Cross (1984) suggests:

> Ironically, the conclusion about the environments which stimulate excellence in corporate America are frequently the opposite of what is recommended for excellence in our schools, but I found that the factors contributing to corporate excellence have much in common with what we think we have learned over the past decade or so about effective learning environments for underprepared learners.

Similar comment might be made regarding *The Image Makers: Power and Persuasion on Madison Avenue* (Myers, 1984), which clarifies how knowing the precise needs, motivations, and habits of various target groups enables those in the corporate world to appeal to those studied. The concepts presented in this work should be analyzed for their possible application to education.

Given improved programs incorporating the results of the latest educational and industrial research, what else can developmental educators do to dispel the conflict regarding the presence of developmental programs on today's campuses? The second step they should take is to routinely communicate with one another. To respond to the future, Miles (1984) urges developmental educators to collaborate regularly. He recommends specific activities: "Inexpensive possibilities include: organizing visits to each other's campuses; exchanging information sponsoring local or regional conferences; trading ourselves to each other as consultants; conducting one-day workshops and the like" (p. 9). Although activities of this kind are already being conducted, more developmental educators need to become actively involved. The value of that which can be shared

should not be underestimated.

A third recommendation for developmental educators is that they take definite steps toward becoming a profession. Miles notes, "We are not yet one, but we are moving in that direction" (p. 9). A key factor in attaining professional status and simultaneously meeting recent requests of governing and legislative bodies is the careful documentation of the gains made by the students in developmental programs. Not only should the gains be documented, but they should be reported widely. In addition, developmental educators need to urge their institutions to fund follow-up studies involving the students whom they've served and who later enroll in content area coursework. Only with reported evaluation can developmental educators demonstrate the effectiveness of their programs on college campuses.

Currently, too little is being done in this regard. Evaluation may be conducted, but apparently it is not being reported. Referring to the respondents in their 1984 study, Roueche, Baker, and Roueche point out, "There is little evidence at present to suggest that these institutions are evaluating their programs any more than they were ten or fifteen years ago" (p. 86). Not only do they comment on the lack of evidence necessary for demonstrating that, upon completion of developmental programs, students can perform at the level required by college level coursework, but they note the paucity of follow-up studies necessary for determining the success rate of the same students in subsequent academic and vocational courses. Both sets of data are required to substantiate the merit of developmental programs and in effect, to validate developmental education as a profession.

A final recommendation, or fourth step, that needs to be taken by developmental educators involves communication regarding important issues with administrative groups and with governing and legislative bodies, who ultimately control the funding of their programs. Those in control of funds must be convinced that developmental education is a critical factor in preventing the loss of valuable human resources and in nourishing economic growth. The positive effect of developmental education on the successful completion of college coursework should be clarified. Frequent dialogue on the elements of student success and the role developmental education plays needs to be conducted.

In conclusion, much needs to be done by those involved with assisting underprepared students on college campuses. The charge is fourfold: (1) drawing on recent research for program improvement; (2) sharing information through a variety of networking activities; (3) establishing professional status, the process of which will require evaluating programs, reporting data, and conducting follow-up

studies; and (4) communicating effectively regarding the role of developmental education with those (including legislators) in control of funds. Although this charge is most comprehensive and will require on-going effort, definite steps should be taken immediately in all areas. Forward movement in each will serve to demonstrate the ablility and motivation of developmental educators to "Reach New Heights."

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CHALLENGES OF DEMOGRAPHIC CHANGE

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Western Interstate Commission
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Thank you. I'm delighted to be here with you today. I work with many levels of energy, and I have become more and more discouraged with the level of higher education and the lack of imagination with which educational leaders in our institutions approach the twenty-first century.

As I look over your program, I am impressed that your association members have focused on the significant issues facing higher education today: student retention, higher-order skill building, use of new technologies to improve educational delivery in content-specific areas, use of computers as educational tools, and holistic approaches integrating mind and body. You have defined challenge by looking into the future rather than to the past, and I commend you for that. Too many of us in higher education seem unable to move beyond an historical perspective. While everything around us is changing, we often continue with a perverse tenacity to cling to the past.

Society is in a transition such as we have not experienced since agricultural society moved into the industrial age. Today the movement from the industrial age to the information society is unfolding everywhere. Yet schools continue to function from the model developed for an agricultural society. While we all sympathize with the plight of the farmer, our clinging to a school calendar intended to provide labor to a farm economy does little to help today's farmers solve the monumental problems that face them. That tomorrow's students will live in a world where they must increasingly relate to eastern cultures and other third world societies goes unrecognized when our national leaders describe the pinnacle of educational experience as a return to the exclusive study of western civilization.

It has been well-documented that any infrastructure that cannot meet the challenge of its time is replaced by alternative pathways to meet the needs of society. The challenge for us in education is one of re-structuring our system. To do this we must look outside of ourselves; we must keep our eyes on things we cannot see.

Today I would like to consider three changes that will severely impact our educational system. Those are: economic changes, demographic changes, and the changing structure of our social organizations.

First, we are moving away from a national economy. Perhaps best described by Naisbet in *Megatrends* (1982) and Garreau in *The Nine Nations of America* (1981), we are moving away from a national economy in two seemingly contradictory directions. We are experiencing a set of regional economies and societies at the same time that our world is shrinking and becoming a global society and economy. For example, when we consider the economic impact of water—its scarcity in the west and southwest and its abundance in the northwest and the south—we see that assumptions about growth and population control are not national but regional issues. State boundaries are also superficial for we find cities that cross state lines—Kansas City, for example. Yet we see that our markets are being impacted by the availability of less expensive labor in developing countries, and production is becoming an international, collaborative venture. Raw materials, such as leather from Argentina, are processed in Spain and sent to Korea to be made into consumable goods. If Americans are to compete in the world market, we must find ways to collaborate and to internationalize our production.

Also, the nature of work is changing. For example, in 1950, fifty percent of Americans held blue collar jobs; today about thirteen to eighteen percent work in blue collar jobs. In 1950, about twenty-five percent of jobs were technology-based; today that number has risen to seventy percent (Robey and Russell, 1984). Information-related jobs are projected to show the greatest growth in the near future, and the service job industry is second in projected growth.

By 1995, it is predicted that seventy-five percent of the workforce will come from two-income families (Snyder, 1984). These workers will change careers—not jobs—at least seven times in their lifetimes according to Tofler. In a recent report, NSF estimates that fifty percent of the cost of automation is for re-training workers. Only fifteen to twenty-five percent of our jobs will require a BA, but, according to Snyder, fifty to seventy-five percent will require technical training.

Secondly, the demography of this country is changing. From 1950-1980, U.S. population grew less than fifty percent; but the Hispanic population grew 265 percent as a result of birth rates and immigration; our Asian population also grew significantly; Black and American Indian population grew more than the white population, but at a lesser rate (Sandoval, 1984).

The median age for Americans is thirty-one. Whites average thirty years; Asians twenty-eight; American Indians twenty-seven;

Blacks twenty-four; and Hispanics twenty-two and a half.

In 1980, twenty-seven percent of the student-age population was minority. In California alone, elementary schools are now majority minority—a curious turn of phrase.

A majority of college students are female; fifty-one percent of women over eighteen are currently employed; and forty-seven to forty-eight percent of U.S. mothers work (Snyder, 1984). In 1955, sixty percent of families were nuclear families—mother, father, children. Today eleven percent of our families reflect that configuration. It is projected that fifty-nine percent of children born in 1983 will live in single parent families (Glick, 1984).

In 1980, 30,000 U.S. citizens were over 100 years old; 2.2 million were over eighty-five, and some researchers anticipate a breakthrough in life extension within the next three to ten years that will extend our lives to 120.8.

Finally, our social organizations are changing. Business has been on the cutting edge and has had to face these challenges first. We are all, however, fascinated by their experience, and we continue to keep books describing this phenomena in business on the best seller lists.

Decentralization is reflected in the rise of the service industry, and both large and small businesses are becoming more entrepreneural. Diversification—often described as multiple option—is evident in the way organizations define their missions. Coca Cola is not in the soft drink industry, but in entertainment; Sears is no longer a department store, but a service industry. Participatory management and the accompanying requirements for different styles of leadership continue to make books on leadership very popular. The high tech/high touch dynamic holds that, for every development in technology, there is an accompanying demand for human interaction. As heart transplants and laser surgery evolved, we developed the hospice movement to re-humanize the death experience. As television developed, so did our interest in group therapy and personal growth. Use of computers and robots in the workplace has been accompanied by our interest in quality circles.

Briefly, those are some of the major societal changes facing us. The implications for education are many and far reaching. I would highlight just a few.

1. We must develop teaching strategies that reach students with diverse learning styles, diverse cultural values, and diverse languages. And we must experience this diversity not as a deficit, but as an asset to be fostered, for this change can no longer be perceived as a social-justice issue but as a matter of institutional and societal survival.

2. We must re-define skills in terms of long term adaptability and

change. ECS recently identified job skills for the 1990's as skills in: evaluation and analysis; critical thinking; problem solving; organization; reference; synthesis; creativity; decision-making with incomplete information, and communications skills in various modes (Hodgekinson, 1984). That's a big order. On good days, most of us can perform in two or three of those areas—yet this is what we must teach our students.

3. We must teach our students about values changes which make decisions so much more difficult. For example, the ethical decisions regarding health could once be made largely on the basis of tradition. Today our medical community and we as consumers of medical services are faced with increasisngly complex and difficult ethical decisions. These are likely to increase rather than decrease.

4. We must expect our teachers and administrators to be comfortable and knowledgeable about different cultures and values—and these criteria must be incorporated into our credentializing process.

5. We must increasingly help our students figure out how to live self-fufilling lives in spite of non-fufilling careers. A growing number of Americans report being bored with their jobs as meaningful work declines and the sophistication levels of our workforce increase.

Let me close with a few ideas (adapted from Kantor, 1983) about how each of us can support innovation: (a) be open to new ideas, especially those that come from a stature below yours; (b) praise and support people's efforts at innovation; (c) approach mistakes—yours and those of others—as necessary steps to the breakthrough; (d) treat the identification of problems as challenges to be met; (e) assess and reassess your expectations; (f) be flexible. Dare to be vulnerable, and (g) share authority.

We live in an exciting time. We move in unchartered waters. Godspeed to us all.

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TETRAHEDRAL MODELS OF LEARNING: APPLICATION TO COLLEGE READING

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In order for students to be academically successful, they must be active learners (Tierney, 1982), be able to regulate and monitor their learning (Brown, Compione, & Day, 1981), and be able to generate and transfer meaning (Whittrock, 1974). The many facets of what must transpire in order for understanding and learning to occur are no more apparent than at the college level where professors expect students to be competent and effective learners. However, anyone who teaches college reading/study strategies courses knows that professors are often shocked at the incompetency of students' studying and learning behaviors. In fact, it is common knowledge that in recent years the readability of college level texts has declined while grade inflation has increased (Maxwell, 1979). Rather than examining the reasons why students enter college as inefficient and ineffective learners, educators often place the blame on someone else. College reading instructors blame high schools for inadequately preparing students; high schools blame middle schools; middle schools blame elementary schools, and elementary schools blame parents. Few people—professors, teachers, parents, students—stop to consider the complexity of the learning process itself as a plausible explanation for the inadequacies of students—even college students.

Even feeble attempts at examining learning leave one with the overwhelming feeling that it is indeed a miracle that we learn anything! The purposes of this paper, therefore, are (1) to examine the interrelated aspects of learning using Bransford's tetrahedral model (1979) and (2) to provide practical techniques, strategies, and considerations for each facet of Bransford's model that can be used to make college students more efficient and effective learners.

Bransford's Tetrahedral Model

As the term tetrahedral suggests, Bransford's model of learning

considers four variables: (1) learning activities, (2) characteristics of the learner, (3) criterial tasks, and (4) the nature of materials. Learning activities involve an array of processes in which students must engage in order to learn, understand, and remember. These processes include attending to the information to be learned, using the appropriate rehearsal strategies, and elaborating so that the material can be more deeply processed. These learning activities enable information to move through the different memory systems, to be stored, and to be retrieved at future times. While it is fairly easy to teach students a variety of learning strategies, it is often difficult to get students to apply them.

Characteristics of the learner pertain to the attitudes students have about learning, the skills that they bring with them to the learning situation, and perhaps most important, the prior knowledge and experiencial backgrounds that students possess. Without sufficient prior knowledge, comprehension is difficult, if not impossible, and without comprehension, little learning can occur. Students not only must have "memory hooks" on which to hang new incoming information, but they also must be able to activate the prior knowledge that they have. Insufficient prior knowledge is much more difficult for instructors to impact upon than either attitudinal problems or teaching students how to activate the prior knowledge they have. College instructors tend to become most frustrated when dealing with this aspect of learning.

The third variable in Bransford's model is carrying out the specific criterial tasks so important for learning to occur. These tasks include the ability to perform on both recognition and recall tests, transferring learning from one situation to a new, but similar, situation, and problem solving. Many students are under the assumption that studying for objective and essay tests requires the same set of strategies. Likewise appplying knowledge to new situations is certainly more difficult than memorization. The difficulty many students have with mathematics indicates that problem-solving abilities are often weak.

The fourth variable in the model, the nature of materials, examines the organization, structure, and conceptual difficulty of the learning materials. It also examines imagery, meaningfulness, and the deep and surface structure of language.

What is apparent from Bransford's tetrahedral model is that learning is an extremely complex process with many interrelated parts. If only one aspect of the learning process is weak or not present, other aspects will be overtaxed—perhaps to the point where learning is inefficient or ineffective. For example, students who know

appropriate study strategies but do not apply them because of motivation or attitude problems and students who have test anxiety will experience difficulty in college because at least one aspect of learning is not functioning properly.

Since learning involves numerous interwoven factors, both isolating the skills for research purposes and conducting naturalistic research are problematic. Isolation of strategies, such as comparing underlining to outlining, actually tells little about learning, yet researchers often make sweeping generalizations about the effectiveness of one strategy over another. On the other hand, total naturalistic research is also often misleading because it is difficult to determine to just what extent one variable affects the other. Weinstein and Rogers (1984) support this view and offer suggestions for future consideration:

> Much research has been directed to identifying the important attributes of a variety of learning strategies. The older literature is replete with folklore and common sense notions about study skills that only recently are being subjected to more systematic empirical study, and much of the literature on cognitive strategies is too new to offer well-documented procedures. When these problems occur, we must create instructional guidelines based on the data available. These new instructional sequences are then field tested in supplementary studies and in the course itself. This is a challenging and laborious task, but a necessary step toward the development of effective training programs (p. 16).

While most college reading instructors agree that learning is an active as well as interactive process, teaching methodology is often inconsistent with the Bransford model. Instructors who teach college reading as a series of isolated skills may fail to emphasize the interactive process of learning, fail to teach study strategies, or fail to have students apply them in realistic contexts. Two examples illustrate problems with the traditional skills models. First, giving college students the task of finding the main idea of a paragraph in a brief article has little relevancy in the real college world. In what course will students have to perform such a task? Finding the main idea of a paragraph has little, if anything, to do with being able to pull out major concepts from a text chapter or lecture notes.

Second, while college reading instructors may spend a brief period of time discussing study strategies, students may not be expected to apply the strategies to college level texts. Nor can students learn an adequate study process in a week. For most students enrolled in a college reading course, it takes at least one term to be able to effectively apply the strategies. Even with outstanding instruction, it is

difficult to get students to apply what they have learned in a reading/study skills course to outside content courses. Nevertheless, there is a much better chance of transfer when students see the relevancy and interactive nature of what they are taught.

Bransford's model provides a research-based, theoretical framework that can be used to teach, model, and have students apply a variety of strategies. The techniques suggested below stress the interrelated aspect of the model since all of the techniques consider more than one of the four variables. However, the techniques and strategies will be described under the aspect to which they most directly relate.

Learning Activities

Being able to apply a variety of learning activities is certainly a prerequisite to college academic success. Without knowledge of a repetoire of study techniques, students will be neither efficient nor effective learners. Learning activities are those techniques that give rise to learning. Surveying, questioning, mapping, proper text underlining, making concept cards, and summarizing are but a few strategies that college students should be able to apply. As suggested by Weinstein and Rogers, the most important idea is that students learn a study sequence to follow. They need some order to how they approach a task. They need to understand the importance of distributed practice. Above all else, students must apply the proper study methods again and again until they become an integral part of their daily routine.

Mnemonic devices are also important strategies for students to learn. Exposing students to the peg word method, method of loci, imagery, and other mnemonics can make factual and concrete learning easier. While mnemonics will not work for all kinds of learning, they give students additional techniques to use in specific situations. For example, the peg word method is particularly good for learning lists, while imagery is particularly useful for learning new terms or concepts, particularly those which are concrete.

Teaching students how to "chunk" information also falls under learning activities. Many freshmen view learning as isolated in that each new bit of information is learned by itself. However, chunking is especially important for holding information in short-term memory (Miller, 1956). Students can readily remember "photosynthesis," one word or chunk, but would have difficulty remembering "pkyirtczsyvcbq," 14 letters or chunks. Hence, in order to be efficient and effective learners, students must be taught how to chunk new

incoming information for the purposes of storage and retrieval.

Finally, students must learn the importance of daily review and distributed practice. All too often students equate time on task with success. With such an attitude, the amount of information learned in ten hours the night before a test would equate with ten hours of preparation spread over five days before the exam. Students must clearly understand not only the importance of daily review for each subject, but also the difference between using rehearsal strategies for initial learning and reviewing to maintain the information in long-term memory.

Characteristics of the Learner

The second crucial aspect of the learning process is what the student brings to the learning situation. Obviously this aspect of the model is one over which the instructor has little control. Those enrolled in a college reading course often have inadequate, limited prior knowledge on topics covered in content courses. These deficiencies surface as weak vocabularies and weak or nonexistent "memory hooks" on which to hang incoming information. However, college reading instructors can help fill in some of these gaps by using weekly news magazines, such as *Newsweek* or *Time*, and newspapers in their classes. These types of reading expose students to a variety of current topics which can be used for not only providing background information, but also increasing vocabulary, creating interest, and increasing comprehension (Nist, Kirby, and Ritter, 1983).

Not all underprepared students lack prior knowledge, however. Many simply do not realize the importance of activating the knowledge they already possess. They tend to view each learning situation in isolation and do not tap their existing knowledge—psychology has nothing to do with sociology, which has nothing to do with philosophy, which certainly has nothing to do with literature. In fact, some students look at each psychology or sociology chapter as isolated fragments of information and dismiss what they have learned after they are tested. Hence, college reading instructors must show students how to tap into that existing knowledge and how to use it in a variety of situations. This can be accomplished in several ways. Using news magazines, instructors can select a topic and develop a better understanding of the topic by building on it throughout the term. Instructors can readily refer to information gleened in past reading and tie it to new information. This kind of positive modeling points out to students why the activation of prior knowledge aids in both comprehension and memory. Finally,

instructors can tell students to list what they already know about topics presented in a chapter after they have surveyed. Most students are extremely surprised to discover that they know a considerable amount about a topic with which they felt very unfamiliar.

A final characteristic of the learner that must be considered is the attitude the individual has about learning. Students who resent taking a college reading class are almost certain to have attitudinal problems, but through good instruction, where students see the relevance of what they are doing, these attitudes can be altered. Students sometimes comment on weaknesses in math and writing skills; few admit reading weaknesses. College reading instructors are faced with the task of convincing students that what they have to say is important and will be useful to preparing for content courses.

Criterial Tasks

The third facet of Bransford's model is the ability to determine and carry out a variety of tasks. For the college reading instructor, this would involve teaching students how to take both essay and objective tests as well as how to solve problems. While most students are aware that differences between tests exist, few realize the implications these differences have in selecting the appropriate study strategies, preparing for the tests, and actually taking the tests.

Few students realize the importance of predicting test items before the exam. Teaching students to use all information available to them as a way to "get inside" a professor's head in order to make accurate predictions about test questions is one of the most valuable things students need to learn. Encouraging them to write out answers to predicted essay questions and having a classmate critique their answers also help students receive feedback on the quality of their answers.

Basic test-taking strategies, such as doing the items the students know first, not changing answers unless they're positive about the change, becoming reflective rather than impulsive test-takers, and eliminating unplausible answers are all ideas that instructors must constantly reinforce.

Instructors also must teach students how to evaluate their test performance (Simpson & Nist, 1984). The majority of students view the end test product as a grade to be tucked away in the back of a notebook. However, students need to be taught to examine the missed items to see what patterns exist in their errors by asking themselves the following questions:

1. Did I miss questions from my lecture notes?

2. Did I miss questions taken from information that I should have underlined/annotated in the text?

3. Did I miss questions over handouts, films, or outside readings?

4. Did I miss questions over key vocabulary?

5. Did I miss application questions?

6. Did I miss questions because I failed to read the item carefully?

Once students learn how to use test results diagnostically, scores on subsequent exams improve.

The Nature of the Learning Materials

Instructors and students alike often ignore the importance of the text as a variable contributing to the learning process.

However, this variable usually determines why a professor selects one text over another. For example, there are many introductory psychology texts on the market, each covering similar topics. Major differences among the texts are in text organization, format, study aids provided, clarity of explanation, and in some cases, readability. Students should learn to carefully examine a required text to see how it is organized. Does each chapter follow a similar format? Are study aids such as chapter outlines, headings/subheadings, summary statements, questions at the end of the chapter, italicized terms, and lists of terms at the end of the chapters provided to help readers more easily learn the information? Is it easy or difficult to pull out the major ideas in the chapter?

Students can become aware of the differences by going to the library to examine and contrast several texts from the same discipline and several texts from different disciplines. Discovering that differences, often major ones, do occur among texts is yet another way of stressing the importance of the need to possess a variety of study strategies. Since texts differ from each other, methods used to learn such texts must also differ.

Conclusions

Many models and theories of learning and understanding provide little in the way of practical suggestions to aid in learning. However, Bransford's tetrahedral model is one for which college reading/study strategy instructors can readily supply teaching suggestions. The model certainly brings to light the complex, interrelated aspects that must mesh in order for learning to occur. It reminds us that merely teaching a series of reading or study skills to students

is at best insufficient to ensure maximum learning. It also reminds us that, as instructors in college reading programs, our jobs are indeed massive. However, to teach students in such a way that all four variables in Bransford's model are addressed should be the major goal of any college reading program.

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PLAE: A STRATEGY REGULATION MODEL FOR SUCCESSFUL INDEPENDENT LEARNING

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Numerous studies have investigated a wide variety of reading and study strategies used by college students. While these studies have contributed knowledge about effective and efficient strategies that should be taught to students to assist them in their independent learning, the research has also been severely limited in its perspective. A majority of these studies, in their concern for the comparative efficacy of differing approaches, have focused on product outcomes rather than process outcomes (Brown, Bransford, Ferrara, & Campione, 1982). Researchers have also conducted their studies in artificial contexts which have ignored the factors that interact to affect students' learning (Wagoner, 1983). Most importantly, these research studies, though useful, have tended to examine only one metacognitive component, knowledge about cognition, to the exclusion of the other metacognitive component, regulation of cognition (Baker, 1982). Strategy regulation involves students in the processes of planning activities prior to under aking a problem, monitoring activities and strategies during their learning, and checking and evaluating outcomes against the criteria of efficiency and effectiveness (Brown, et. al., 1982).

College reading professionals have been told that most of their students lack the ability to plan, monitor, and evaluate their own learning (Rinehart & Platt, 1984; Simpson, 1985). Nist, Hogrebe, and Simpson (1985) found in a study of their own students enrolled in a college developmental reading program that they could learn the effective strategies for successful independent learning, but that this strategy awareness and knowledge was not sufficient to enable them to pass content area examinations. They concluded that their students needed to learn how to control and regulate those strategies if successful academic transfer was to occur.

Unfortunately, there are few practical suggestions as to how to

teach this strategy regulation of learning. There is, however, one field-tested model, PLAE (Simpson & Nist, 1984), which offers some promise. In this presentation I will describe the model, the preliminary research on its effectiveness, and suggestions for its implementation.

The Model

The PLAE model was primarily based upon Jenkin's (1979) tetrahedral model of learning. He proposed that successful learners are not only aware of the basic strategies for reading and remembering text and of the simple rules of text construction, but that they are also sensitive to the differing demands of a variety of tasks and to the importance of their activating any background information they may have. Implicit within Jenkin's model is the assumption that studying is not a generic process, but rather a task specific process. Hence, the first step of PLAE asks the student to define the task so that in the second step, Listing, the appropriate strategies can be selected.

PLAE was also based upon some time-honored concepts about the learning process that most students ignore. Students tend to equate studying to "looking at" important material, whereas the PLAE model assumes that studying involves active, self-testing processes which define what is known and what is not known or understood. Students also tend to equate the total time spent on studying with success. Thus, if they devote ten hours to studying the night before the exam, they believe they should excel the next day. The PLAE model takes the stance that distributed practice, not cramming, is the key to good performance. Finally, most students typically believe that the test score is what really counts, not the experience or process of taking an exam. In contrast, the PLAE model's design emphasizes the useful information that can be gained about future exams from the analysis of past test questions.

In order to better explain how PLAE would be operationalized, each phase of the model will be discussed in detail, concentrating on what students should do at each stage.

Stage One—Preplanning

Recent research suggests that successful independent learners more fully recognize the importance of preplanning than less successful learners (Goldin and Hayes-Roth, 1980). Thus, the first step to PLAE and self-regulation is for the learner to define the problems or assigned task via Preplanning. The following questions, if answered

carefully, can assist in this task definition:

1. When is the test? (date, day, time)?
2. Specifically, what are my other obligations that week?
3. What does the test cover? Reading assignments? Lectures? Films? Handouts? Outside assigned reading?
4. How many items or questions will there be on the test?
5. What kind of test will it be?
6. What type of questions will be asked? Factual or memory level questions? Interpretative? Applied?
7. How much does the test count in the total evaluation process?
8. What is my goal for a grade on this test?
9. How much time do I need to spend studying, reciting, and reviewing?
10. How will this time commitment change my regular schedule? Explain.

With a clear concept of the task, the student has completed the first stage of PLAE, Preplanning.

Stage Two—Listing

Once the task or problem has been defined via Preplanning, the student must determine how to solve the problem and how to present this strategic decision-making process in an ideal and workable plan. This is done in Stage Two—Listing. Mature learners have a repertoire of efficient study strategies from which they can select that which best suits the demands of their assigned task (Bransford, 1979). Thus, for a psychology exam, the effective learner might mentally list charting as the appropriate study strategy because of the emphasis on the different theories of Freud and Skinner, whereas he might mentally list the use of mapping as the strategy for study in a biology chapter that discussed the function and effects of hormones and glands.

After the student has mentally listed the strategies most appropriate for the demands of the content and the task, he is ready to allocate his resources into a specific plan of action. Most high risk students either do not create any procedures or plan of study, or they create an inflexible, chaotic plan that ignores the unique characteristics of the study process (Nist, Hogrebe, & Simpson, 1985). Therefore, the plan format is simple and merely asks students to list what strategy has been selected for each session, when and where it will be employed, how long the study session will last, and why the particular strategy is important for this particular test. Once the students have created their plan of action, they are asked to check

their plan with these five questions:

1. Have I distributed my study plan over several days?
2. Did I schedule at least two blocks of time to test myself over the key concepts? for a friend to test me?
3. Did I specifically state my goals for learning (i.e. I will learn the three theories for population growth)?
4. Did I allow enough time to complete each task?
5. Will my plan help me accomplish my goal that I set in the Preplanning stage?

Note that, in contrast to a weekly schedule, this process is active, flexible, and task specific.

Stage Three—Activating

Once the most appropriate study strategies have been mentally listed and a plan of action written, the learners must employ or activate the plan of action. While they are working through the listed plan of action, they should carefully monitor its effectiveness by asking questions that focus on whether the plan's organization and the selected strategies are appropriate and productive in terms of the specified task. Questions such as the following can help the learner monitor the plan's activation:

1. Am I following my list or plan? (If so, place a check in the Did I Do It? column on your plan).
2. If not, why? What is interfering? What are the obligations that I didn't account for?
3. How can I modify my plan without sacrificing my original goal?
4. Am I understanding and remembering the conepts?
5. If not, why? Should I select another strategy? If so, which one? Should I change my study time distributions? Should I build in more self-testing blocks?

A plan that is activated and constantly monitored should produce learners who are secure in what they know.

Stage Four—Evaluating

Once learners have reached the fourth and final stage, Evaluating, they need to check their own learning outcomes in terms of the specified task—the exam. While careful monitoring during the plan's activation should prevent most problems before a test, situations arise where students who felt confident of their knowledge before the test drastically alter this view after completing the exam. Thus, the

evaluation step of PLAE becomes very crucial for future examination success. Instead of viewing the test score as only a terminal product, students need to view the score and results as a way to collect valuable data that will reveal "what went wrong." They should evaluate the exam item-by-item and ask the following questions:

1. Was the test what I expected?
2. Did I follow my plan for studying? If not, what events interfered with my carrying out the plan?
3. How many hours did I study? Were those hours distributed or massed?
4. What types of questions did I miss? Detail and example? Key ideas? Vocabulary? Applications?
5. Did I miss any questions because I misread them? How many?
6. Did I miss questions because I didn't know or recognize the information? If so, where did that information come from?
7. Is there a pattern to my errors?
8. Did I select the most appropriate study strategies for this test? If not, which ones would be more appropriate next time?
9. For the next exam on (supply date) I will so these things to change my pattern of study.

The information from this test evaluation should then provide the necessary information for any modifications during the next cycle of PLAE. Thus, the PLAE procedure is cyclical rather than linear because the Evaluation step provides students feedback for better preplanning, listing, and activating for the next examination or assigned task.

Preliminary Research on PLAE

My colleagues and I were interested in determining if teaching students this systematic process for planning, monitoring, and evaluating would result in increased test scores. As a pilot, this study was meant only to indicate whether or not we were heading in the right direction with the PLAE model.

The subjects for the pilot were 39 students enrolled in their second quarter of a college developmental reading course. The focus of the course was on teaching a variety of study strategies which students could later apply to learning material in regular college courses. None of the students had prior exposure to the PLAE model, but they had discussed the traditional time management procedures during their first quarter of reading.

During the first week of the term, all subjects read, prepared a study plan, and studied an excerpt from a college level American

history chapter. The instructors provided minimal suggestions as to how they should plan and study for the test. After three days of study on their own, the students took a 22-item multiple choice exam. During the quarter all subjects were taught the PLAE model and applied the model in preparation for five different content area examinations. At the end of the quarter, they were again given the chapter exerpt and were told to devise a plan of study and to prepare for the multiple choice exam, which would be given in three days.

The pre-post multiple choice test scores were analyzed using a t-test for a non-independent sample. The results revealed a significant difference between pre-test and post-test scores ($t_{28}=7.90$, p less than .001) indicating that the students' raw scores had significantly improved over the course of the ten weeks.

The findings of this pilot are obviously inconclusive for two major reasons. First, since we used no control group, we do not know how a similar group of students would have performed without exposure to the PLAE model. Second, at this point we do not know how much of the differences between the pre and post-tests were due to factors other than the use of PLAE. Over that ten-week period we exposed the students to and had them apply numerous study strategies in a variety of content area chapters. Hence, stating that gains were solely due to the use of the PLAE model would certainly be misleading. These findings and the informal observations of our students were positive enough for us to analyze the impact of PLAE in an experimental situation. We are presently collecting that data and hope to report it in a few months.

Teaching Recommendations

We have taught and fine-tuned the PLAE model for more than one year. Our experiences with a variety of high-risk college students during this time have provided us with several teaching suggestions to those contemplating the use of PLAE to improve their own students' abilities to plan, monitor, and evaluate:

1. All of the stages need to be taught over a sustained period of time. With some students, ten weeks on instruction will not be sufficient.

2. Most students need to see each of the stages extensively modeled by the instructor and to receive immediate verbal and written feedback as to the strengths and weaknesses of their own plans of action.

3. The PLAE model can only be taught in a context where students can actually study and prepare for realistic examinations from actual content area material. The PLAE cannot be taught as

an isolated skill.

4. Students profit from hearing their classmates plans of study, especially the plans of those students who did exceptionally well on the exam. Student testimonials are very powerful motivators. After one student who had not been doing well on the previous content area exams decided to space out her self-testing sessions, she aced the next test. Her comments to the class were far more useful than mine had been the entire term.

5. Journal writing is an outstanding follow-up and summarizing activity for the fourth stage of PLAE, evaluating. The example below typifies the type of thinking and evaluating that one student did after reviewing a sociology exam:

> I misread question 4, 14, 15, and 21. Next time I will read each question twice before I look at the four choices. On the essay questions I just did not know enough specific examples and facts. Next time I need to predict the essay questions and then outline my answer with specifics before I go to the exam.

Summary

The PLAE model is obviously not a panacea for the problems that plague college reading professionals who are attempting to prepare their students for the rigors of academics. However, it is a process that attempts to more carefully address the critical question of how college reading programs can develop mature learners who can control and transfer the efficient and effective study strategies for successful independent learning.

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ACTIVATING METACOGNITIVE READING AND STUDY STRATEGIES IN COLLEGE STUDENTS

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Many college students fail to monitor and change their study learning procedures even when faced with failing grades on tests and other homework assignments. They lack the ability to define the task, plan, monitor their progress, and evaluate the outcomes of their efforts (Nist, Hogrebe, Simpson, 1985). Successful college students are able to monitor and regulate their learning strategies, a process described as metacognition. Therefore, a major goal of many college study-skills programs and other retention efforts is to develop students' metacognition—an increased awareness and regulation of one's thought processes. Effective readers use a number of metacognitive strategies. They (1) clarify the purposes of reading in terms of explicit and implicit task requirements, (2) identify important aspects of a message, (3) focus attention on superordinate ideas rather than trivia, (4) monitor ongoing activities to be certain comprehension is occurring, (5) engage in self-questioning to determine if task goals are being achieved, and (6) apply new strategies when old strategies are not yielding comprehension (Brown, 1982).

This paper will describe how journal writing and a metacognitive strategy checklist have been successful in helping college students activate metacognitive learning strategies.

Journal Writing As An Educational Tool

Several educators advocate the use of journals in content subjects as diverse as mathematics and history and from elementary school through college levels of instruction (Britton et al, 1975; Craig,, 1983; Emig, 1971; Fulwiler & Young, 1982; Geeslin, 1977; Haley-James, 1982; Hoffman, 1983; Lehr, 1980; Ouzts, 1983; Rogers, 1984; Smith & Mazuda, 1982; and Swanson, 1984). They cite such benefits as increased writing fluency, creative problem-solving, self-awareness, content learning, reading comprehension, metacognitive awareness,

and improved test-taking skills.

A review of the literature shows that a few college learning labs and study-skills classes use journals to enhance metacognitive awareness and regulation. Smith and Mazuda (1982) encouraged students to keep a problem-solving diary. They recorded actions taken to change unsuccessful learning habits and the outcomes of such actions. Hoffman (1983) asked students enrolled in a study-skills class to write about the process involved in becoming a successful college student. During a fourteen-week semester students wrote in journals four times a week, discussed entries after the first four weeks, and reread their own entries every five weeks to identify patterns of behavior. Students concluded that writing the summary essays helped them to become more aware of and to take responsibility for their own behaviors and attitudes in doing college work and for the consequences of those behaviors.

Structured Journal Writing

While journal writing refers to the private, self-expressive and reflective writing one can do as a way of understanding self (Kaiser, 1981), structured journal writing for metacognitive activation requires the writer to attend to specific questions related to academic tasks. In the early stages of this procedure, the instructor identifies and orders the questions to be answered. Later, students self-select journal topics according to their specific learning goals. The structured journal technique for metacognitive activation described in this paper is based on the conclusions reached by Progoff (1975) after years of experience teaching others to use journals as a means of self-renewal. A major characteristic of Progoff's journal method is the careful structuring and sequencing of the specific journal entries. He found that, without structure, journals often become circular, a diary of events going nowhere.

Structured journal writing is an easy way to incorporate a metacognitive approach into instruction. Researchers of study-skill development conclude that the "blind training" model of teaching such study skills as highlighting, outlining, and SQ3R is ineffective (Anderson, 1984; Simpson, 1983). The research suggests that such instruction in study strategies is most effective when it includes instruction and/or training in metacognitive skills (Anderson & Armbruster, 1984; Brown & Baker, 1984). Emphasis must be placed on facilitating individual interaction with study materials in response to specific tasks. Students must learn to monitor their own learning behaviors and the effects of those behaviors on specific learning goals.

Structured journal writing can help them identify and regulate effective learning strategies.

Simpson (1982) describes a diagnostic model for college learners which emphasizes the complex interaction of four variables: task characteristics, the learner's strategies and processes, text characteristics, and the learner's characteristics. She suggests the college reading or learning specialist collect information on each student in these four areas through interviews, observations, diagnostic teaching sessions, and teacher-made instruments.

Using Simpson's (1982) four variables, Swanson (in press) formulated a series of journal-writing topics and suggested that a structured journal technique could be more effective in some instances than an interview technique to elicit meaningful, accurate responses. A student who may not have contemplated previously such questions as: "What kind of test will you have? When?" may very well respond, "I don't know" or "I just know there's a 25-point quiz on Friday." A skillful interviewer, using appropriate probing questions, may be able to elicit meaningful responses from the student if time permits. On the other hand, asking the student to write his/her thoughts on the same questions in a journal, without worrying about spelling or sentence structure, may provide both student and instructor valuable information which the student did not know he/she knew; writing about the test could enable the student to discover or become aware of previously unknown information. Swanson's (in press) list of possible journal topics emerging from Simpson's (1982) model is located in Appendix A. In the early stages of implementation, specific topics for writing should be selected from the list by the instructor according to the student's perceived needs. The student and instructor could benefit from a combination of writing, interview, and observation formats. In later stages students should formulate and sequence their own journal topics to foster the development of independent-learning strategies.

Students unfamiliar with journal writing will need to be encouraged to write for a sustained period of time (5-10 minutes) on each question, even when their initial reaction is that they do not have anything to write. These students should be encouraged to rewrite the question or to explain why they cannot answer the question. The process of writing often leads one to answers. This important principle was demonstrated by students enrolled in a content reading-methods class. They provided honest, insightful responses when asked to describe their behaviors in class one day (Swanson, in press). One student reported: "I felt fairly confident when parts that I was familiar with were discussed, and when asked, I would comment because I

knew the answer and had something to say. When I didn't understand, I was content to be silent and observe." Another student stated: "I could take a more active part in class. I need to try harder to concentrate on what is being taught." Students read their responses and then assessed whether writing and then reading what they had written had made them more aware of their behavior. Several students reported and increased awareness: "Writing about it helped me realize my behavior."

These journal entries demonstrate the impact of journal writing on students' awareness and regulation of metacognitive behaviors. Each of these journal entries could have led to an informative exchange between instructor and student regarding classroom study behaviors. However, the instructor should discourage students from discussing the goodness or badness of certain behaviors in a judgmental way. According to Progoff (1975), such a use of journals may increase feelings of guilt.

Using The Strategy Checklist

While some students provide clear descriptions of their behaviors in structured journal entries, other students' entries are vague. A checklist may help these students to obtain additional data on their own metacognitive processes after journal writing episodes. In March, 1985, twenty-four students enrolled in a content reading-methods class were asked three questions related to their reading of an assigned chapter: (1) Describe the specific behaviors you used when you read your chapter assignment; (2) Was there a time during your reading when you realized you were not understanding or remembering anything that you read? If so, describe how you became aware of it and what you did then; (3) List all of the things people could do when they realize they are not comprehending. Underline those things which you have tried at one time or another to solve a comprehension problem. The questions were arranged on a page with three-inch answer spaces between them. Students were told to answer the questions in order.

Some insightful responses were given. One student wrote: "I filled out the anticipation guide and then proceeded to read Chapter 8. I read the chapter, marked passages that I felt were important and wrote notes to the side of the marked passages, so I would be able to remember and look up information easily." Another student wrote: "I briefed the questions and graphs on the review sheet and then began reading through the chapter. I found myself checking back on several terms, making sure that I understood the abbreviations and

definitions."

Other responses were less informative regarding the reading process: "I was tired and hungry. It was hard to get into the chapter. I got up twice to get a drink and to keep myself awake. After I read a few pages, I found myself interested and involved in the chapter." A second student said, "I just read it straight through. A few parts, I reread because my mind wandered off while I was reading them the first time."

Immediately after writing responses to these questions, the same students completed a checklist to describe their reading behaviors and then took an objective quiz on the assigned chapter. The checklist (Appendix B) included specific tasks related to the particular textbook in use, a few recommended procedures for using both the text and the supplementary study guides developed by the instructor for the text, and some reading/studying procedures mentioned in the literature, such as checking items on the anticipation guide before reading the chapter and skimming title, subheadings, pictures, and graphics before beginning to read chapter. The last part of the checklist included a few strategies used by readers having difficulty comprehending and/or remembering what they read. They were asked, "When I didn't understand what I was reading, I: (1) reread it, (2) looked up difficult words in glossary, (3) skipped it, (4) asked someone to explain it to me." To the right of each strategy listed, they were to check if using that strategy had helped them to comprehend.

All 24 students used a reread strategy when they didn't understand what they were reading, but only 20 students said the strategy worked to help them comprehend. Ten students reported using the glossary to look up unfamiliar words, and seven said this helped them to comprehend. Students who reported using the fewest strategies scored the lowest on the quiz. Seemingly these students were the least aware of the need to monitor their comprehension actively. They might also be described as passive readers, believing that they were doing their part if they were pronouncing the words.

The journal entries, checklist, and quiz provided helpful diagnostic information to the instructor. More importantly, students became more aware of their reading/study behaviors and the results of those behaviors. Those who did well on the quiz were reinforced to continue using specific strategies. Students who read the chapter, yet performed poorly on the test became aware of the ineffectiveness of present strategies for a particular course and textbook. A major advantage of this three-part procedure is the minimal investment of time required to diagnose twenty-five students: data collection, forty-five minutes; scoring tests, fifteen minutes; tabulating data, 150

minutes. That amounts to 8.4 minutes per student.

The brief discussion which followed the data collection provided powerful support for the metacognitive effects of journal writing. Many students agreed that when they were first asked to write, they could not think of what to say. They were told just to begin writing and words would come. Several students announced that the process of writing had provided them with many things to say, things they were not aware of until they began to write. No one submitted an empty page. One student drew an important metacognitive conclusion during the discussion: "Why do I bother using strategies that don't work?"

Throughout the course instructors have many opportunities to help students monitor and regulate their cognitive behaviors through journal writing. Instructors may define terms they do not think students understand like "schema theory." When students write about how they plan to study for an upcoming test, the instructor may suggest additional strategies. After the test, when students decide how they should modify their study plan for the next test, the instructor may make more suggestions and encourage ideas and experience sharing. In previous classes several students with poorly developed metacognitive monitoring skills benefitted from the voluntary sharing of journal entries during class discussion.

Manzo (1985) relates the rapid growth of metacognitive theory to the psychoanalytic idea that giving conscious expression to subconscious thoughts helps the individual to monitor and self-correct patterns of thought and behavior. He believes this emphasis on the affective dimension of learning holds promise for reversing a trend toward fewer affective objectives in most educational programs.

Journal writing can play a major role in helping students regulate their learning strategies. It can help to plan their work prior to undertaking a problem, monitor activities and strategies during learning, and evaluate outcomes against previously specified criteria of successful learning. Because the journal writing approach described here is intended to activate metacognitve awareness and self-regulation, the instructor will assume responsibiltiy in the early stages for selecting and sequencing specific journal topics; later, students will select and sequence their own journal topics.

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APPENDIX A

Journal Topics to Supplement Simpson's Diagnostic Model

I. Characteristics of the Task
- A. What do I need to be able to succeed in this class?
- B. What kinds of tests will I have to take in this class?
- C. Why did I do porly on the last test?
- D. What do I need to do differently on the next test?

II. Learning Strategies Employed
- A. How do I usually read a chapter when I know I am going to be tested?
- B. How and when do I use such techniques as underlining, notetaking, or writing marginal notes?
- C. How do I know when I am ready to take a test?

III. Characteristics of the Text
- A. What are the important features of this text?
- B. How is each chapter organized?
- C. How has this author organized his/her material? Am I aware of particular organizational patterns such as simple-listing, comparison-contrast, cause-effect, problem solution, time-order?

IV. Characteristics of the Learner
- A. What do I already know about this subject?
- B. What are some of the things I would like to learn in this class?
- C. Am I having difficulty with the words in this text? Which ones?
- D. Can I summarize a paragraph from the text? How did I go about doing this?

APPENDIX B

Please check only those items which describe your behavior while reading the chapter?

____ Checked items on anticipation *before* I started reading the chapter.

____ Read study guide questions before I started reading the chapter.

___ Skimmed title, subheadings, pictures, graphics *before* beginning to read chapter.
___ Read each word of chapter.
___ Stopped reading after each section to ask myself questions about what was read.
___ Read chapter through to end without stopping.
___ Reviewed what I had learned from the chapter after I finished reading.
___ Checked items in reaction guide after reading.
___ Underlined important ideas while I read.
___ Wrote notes in the margins of the book.
___ Wrote notes in a separate notebook or on cards.
___ Answered study guide questions while I read.
___ Answered study guide questions after I read.

Please check items which describes the way you took notes.

___ Brief statements in outline form, with details indented under main ideas.
___ Summary statements in my own words.
___ Lists of words or ideas taken directly from the chapter.
___ Other (please describe).

Quantity of notes taken for this chapter.

___ ½ page
___ 1 page
___ 2 pages
___ 3 or more pages

When I didn't understand what I was reading I:

___ Reread it
___ Looked up difficult words in the glossary.
___ Looked up difficult words in the dictionary.
___ skipped it
___ asked someone to explain it to me
___ Other (please describe)

___ Check here if the strategy worked to help you understand.

Now describe anything else you did or were aware of while reading the chapter.

FIELD-TESTING A PIAGETIAN APPROACH TO IMPROVING COLLEGE READING ABILITIES

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Atlthough it has not generally been recognized, the classical assumption that reading is reasoning (Thorndike, 1917) implies that where thinking abilities are not used appropriately, reading comprehension will suffer. The need for reading-reasoning is most apparent in university and college reading tasks in which students are required to scrutinize and evaluate complex text with limited guidance from their professors. In much of this reading, particularly in the social sciences, independent judgments are called for, and within or between text, ambiguities and contradictions must be resolved. Formal operational thinking as defined by Jean Piaget (1972) provides some explicit characteristics of such reasoning including the capacity to recognize possibilities, withhold judgment until all of the data is considered, and use "hypotheses ... [to] adopt the point of view of the adversary (although not necessarily believing it) and ... [to] ... draw the logical consequences it implies" (p.4). In short, this kind of reasoning closely parallels the scientific method as it proceeds through four basic stages: (1) establish hypotheses, (2) collect data, (3) analyze data, and (4) draw conclusions regarding the hypotheses.

The theoretical link between advanced reading tasks and formal thinking has been developed elsewhere (Lee, in press). This research extends the theoretical discussion with an emphasis on methodology. If reading instructors address the reading/reasoning linkage, they can improve student reading comprehension in a short amount of time. This article describes a practical instructional method that systematizes formal reasoning abilities together with advanced reading techniques. It also presents the results of two separate field-tests where the method was used with remarkably similar success.

The Instructional Method

Stauffer (1968) conceived of all reading as reading AND thinking where the reader-thinker deliberately creates thoughts in response

to text through a reflective process that very closely resembles the stages of the scientific method. Used as a classroom teaching method for elementary, learning-to-read instruction, Stauffer's method was called the Directed Reading-Thinking Activity (DRTA) and had three phases: (1) posing "relevant questions", predictions, conjectures, and hypotheses about the content to be read; (2) reading, selecting, and analyzing the available data to find appropriate answers for the questions; (3) judging the validity and comprehensiveness of the initial conjectures and accepting, rejecting, or modifying them into conclusions (Stauffer, 1975, p.35).

Since the DRTA is an obvious corollary to the reading-reasoning approach, it was adopted in theory and modified in practice for use both as an instructional framework and as a model of good reading. The three phases were restructured into four (phase two was divided into collecting data and analyzing data), and the process was called the Directed Reading-Thinking Act to more accurately reflect an individual, silent-reading orientation. Then, appropriate reading techniques were assigned to each phase as follows: (a) establish hypotheses through prereading activities, (b) collect data through paragraph analysis and text-marking activities, (c) analyze data through review, synthesis, and note-taking activities, (d) validate hypotheses and draw conclusions by reflection on the products of phases b and c.

While the process was described in discrete phases, it was recognized that good reading attends to several levels of text analysis and evaluation simultaneously, thereby creating a much more intricate process where one DRTA is nested within another and different phases may be at work at the same time. There is, for instance, a superordinate DRTA that attends to the author's topic outline and ends with an assessment of organizational structure, as well as an internal DRTA that attends to the idea structure or the presentation of concepts and facts within sections and/or paragraphs, one that ends with assessments for credibility, validity, etc.

Field-Testing the Method

The Summer Bridge Program

The DRTA was field-tested with two different populations of poor readers during the 1983 and 1984 Summer Bridge Programs at UCSD. Summer Bridge is a four-week program for Educational Opportunity Program and affirmative action students who are invited to live on campus the month prior to the start of their first fall quarter. "The primary objective of Summer Bridge is to increase retention"; thus, the program has a heavy emphasis on academic work and

supporting "cocurricular ... activities" (Waterhouse, 1982, p. 47).

In the academic portion of the 1983 and 1984 Summer Bridge programs, all students attended non-credit math and science classes for two hours each day and a 4-unit writing course for four hours each day. The latter, called the response class, was modelled after a typical university course with bi-weekly lectures given by a professor, outside reading assignments, and discussion/work groups led by upper division undergraduates. During the course, students finished three complete reading-writing cycles ending with 1500 word academic analyses of text. Paper One focused on paintings by the 16th century artist Peter Bruegel and a text of art criticism (Rosomon, 1969). Paper Two relied on a text which analyzed the sociological implications of Disneyland (Real, 1977). Paper Three, utilizing a text by Walzer (1977), evaluated the ethics of war.

Subjects

In 1983, 149 students attended the Summer Bridge Response Class, and in 1984, 166 students took the response class. As a cocurricular activity, these students attended one of four supplementary workshops designed to address skill development needs (the Reading Workshop or the Grammar and Mechanics Workshop) or to provide a greater range of writing experiences (Expressive Writing or Contemporary Issues workshops). Students were directed to attend the skill development workshops on the basis of their below-the-median score on reading and writing pre-tests, with the lowest individual skill score determining whether they attended the Reading or Grammar Workshops. The pre-test was given two days before the response class and workshops began.

In 1983, 38 of the students (26%) were assigned to the DRTA Reading Workshop (RW), and in 1984, 50 students (30%) were assigned to the RW. (The remaining text will focus on the 1984 group with 1983 statistics noted in parentheses.) About 56% (76%) of the RW participants were female as opposed to 58% (50%) for the total group. On the pre-test, the Paragraph Comprehension portion of the McGraw-Hill Basic Skills System Test, which has 30 items, the mean workshop score was 14.62 (13.9) as opposed to 19.96 (19.95) for non-reading workshop students (NRW). In both years, these differences were statistically significant at the p less than .001 level.

Method

The DRTA was presented in seven (5), 50-minute sessions over a period of three weeks. Two sessions were spent introducing the DRTA at the topic level, three (2) on the internal DRTA at the

expository paragraph level, and two (1) on a symbolic DRTA focusing on imagery and themes within poetry. The format was the same for all of the sessions. During the first half of each period, a portion of the DRTA and accompanying techniques were presented through demonstration, Socratic questioning, and discussion led by a reading specialist. During the last half of the class, the students formed small groups led by experienced reading tutors where the techniques were directly applied to the response class reading materials. At the end of the response class, all Bridge students were posttested on a second form of the McGraw-Hill Reading Comprehension Test.

Results

Three statistical tests were used to analyze the pre- and posttest Paragraph Comprehension scores. A t-test for dependent samples was used to assess within-group gain scores. A t-test for independent samples was used to compare the between group scores for the

Table 1

Comparison of Pre-, Posttest, and Gain Scores for Reading Workshop and Non-Reading Workshop Students (1983)

		Pre-test		Posttest		Gain	
Group	n	x	t	x	t	x	t
Within Group t-Tests:							
RW	37	13.9		15.1		1.2	1.8*
NRW	111	20.3		18.2		-2.1	-4.2**
Between Group T-Tests:			7.2**		4.7**		3.9**

*p less than .08

**p less than .001

Reading Workshop (RW) and non-reading workshop (NRW) students on the pre-test, posttest, and gain scores. And lastly, a one-way analysis of variance with a Scheffe post hoc test was used to assess the between group differences for the four workshops. (For the 1983 group, one RW student was dropped from the analysis because her raw posttest score of 0 was judged to be an invalid score.)

Tables 1 and 2 show the results of the t-tests.

Table 2

Comparison of Pre-, Posttest, and Gain Scores for Reading Workshop and Non-Reading Workshop Students (1984)

		Pre-test		Posttest		Gain	
Group	n	x	t	x	t	x	t
Withen Group							
t-Tests:							
RW	50	14.6		16.1		1.4	2.6*
NRW	116	20.0		18.7		-1.3	-3.8**
Between Group							
t-Tests:			9.2**		4.0**		4.2**

*p less than .01

**p less than .001

The RW students scored significantly lower on both the pre-test and the posttest than the NRW students (p less than .001); RW mean scores were 14.6 (13.9) and 16.1 (15.1) versus NRW scores of 20.0 (20.3) and 18.7 (18.2) respectively. Their mean gain score of positive 1.4 (1.2) was significant at the p less than .01 level (p less than .08), while the NRW mean gain score of negative 1.3 (-2.1) was significant at the P less than .001 level (p less than .001). The mean gain difference of the RW over the NRW was significant at the p less than .001 level (p less than .001).

Tables 3 and 4 show the results of three separate ANOVA's for the four workshop groups on the pre-, post, and gain score means.

Table 3

Pre-Test, Posttest, and Gain Score ANOVAs for the Four Workshop Groups (1983)

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F Ratio
Pre-Test				
Between Groups	3	1558.68	519.56	25.7**
Within Groups	144	2915.39	20.25	
Total	147	4474.08		
Posttest				
Between Groups	3	578.79	192.93	18.9**
Within Groups	144	1469.88	10.21	
Total	147	2048.67		
Gain Score				
Between Groups	3	314.70	104.90	4.3*
Within Groups	144	3513.49	34.40	
Total	147	3828.19		

*p less than .01

**p less than .001

Table 4

Pre-Test, Posttest, and Gain Scores ANOVAs for the Four Workshop Groups (1984)

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F Ratio
Pre-Test				
Between Groups	3	1266.85	422.28	38.5**
Within Groups	162	1776.88	10.97	
Total	165	3043.73		
Posttest				
Between Groups	3	654.77	218.26	14.59**
Within Groups	162	2422.82	14.96	
Total	165	3077.59		
Gain Score				
Between Groups	3	283.92	94.64	6.65**
Within Groups	162	2304.43	14.23	
Total	165	2589.35		

*p less than .01

**p less than .001

Significant differences were found for each of these tests: the pre-test F ratio was 385. (25.7), p less than .001 (p less than .001); the post-test F ratio was 14.59 (18.9), p less than .001(p less than .001); the gain score F ratio was 6.65 (4.3), p less than .001 (p less than .01).

Tables 5 and 6 present the mean comprehension scores for each of the workshop groups and the results of the Scheffe post hoc test.

Table 5

Comprehension Mean Scores and Scheffe Post Hoc Results (1983)

Workshop	n	Pre-Test x	Posttest x	Gain x
1. Reading	37	13.9	15.1	1.3
2.Expressive Writing	39	21.4	19.4	-2.0
3.Grammar & Mechanics	38	17.6	15.4	-1.7
4.Contemporary Issues	34	22.0	19.5	-2.5
Total	148	18.7	17.5	-1.2
Scheffe Post Hoc: (groups that differ at p less than .05)		1 & 2,3,4 2 & 3 3 & 4 not 2 & 4	1 & 2,4 2 & 3 3 & 4 not 2 & 4 not 1 & 3	1 & 2,4 not 1 & 3 or any others

Table 6

Comprehension Mean Scores and Scheffe Post Hoc Results (1984)

Workshop	n	Pre-Test x	Posttest x	Gain x
1. Reading	50	14.6	16.1	1.4
2. Expressive Writing	29	20.6	19.9	- .7
3. Grammar & Mechanics	37	17.8	15.9	-1.9
4. Contemporary Issues	50	21.2	20.0	-1.2
Total	166	18.4	17.9	- .5
Scheffe Post Hoc: (groups that differ at p less than .05)		1 & 2,3,4 3 & 2,4 1 & 3 not 2 & 4 not 2 & 3	1 & 2,4 3 & 2,4 not 2 & 3 not 2 & 4	1 & 3 1 & 4 not 1 & 2 or any others

The Reading Workshop group differed at the p less than .05 level from all other groups on the pre-test and from the Expressive writing and Contemporary Issues groups on the posttest and from Grammar and Mechanics and Contemporary Issues (Expressive Writing and Contemporary Issues) on the gain scores. Most importantly, the Reading group was the only group that showed a positive increase from the pre-test to the posttest.

Discussion

The significant increase in comprehension scores for the RW participants and the remarkable consistency between the two pilot studies support the conclusion that the DRTA workshop sessions had a positive effect on the participants' comprehension performance as measured by the *McGraw-Hill Paragraph Comprehension Test*. It

should be noted, however, that the reading portion of the *McGraw-Hill Basic Skills System Test* assesses general skills such as recognizing main ideas, general principles, details, tone, and purpose. It does not specifically assess the kind of formal reading proposed here; nor does it allow for application of some of the techniques taught in the workshop (e.g., note-taking, synthesis, and reflection). Thus, it is not possible to determine the amount of actual growth in the concepts, techniques, and behaviors taught in the workshop or their relationship to general reading comprehension. Future research should investigate these relationships.

The significant decline in NRW student scores also indirectly supports the effectiveness of the Reading Workshop. It is not at all likely that these "good readers" actually lost reading skills during the intensive, reading & writing response class and workshop experiences. However, it is entirely possible that the RW students had new strategies to try out and a new sense of reading power that contributed to their increased scores, while the NRW students did not experience a similar level of active participation and, therefore, did not approach the test in the same manner as they had the pre-test when everything was new and perhaps more interesting. Several NRW students did mention issues of boredom during the test experience.

Thus, these results are supportive of the DRTA workshop techniques and the assumption that very poor university readers read with less comprehension because they do not apply adequate reasoning strategies to the text as they read. Further, the results have important implications because the workshop students would, by virtually any definition, be classified as very poor, if not remedial, readers. These results are particularly interesting because it is generally believed that very poor readers require a great deal of skill development instruction (a full quarter or more of weekly work) before any measurable change can be seen on standardized tests. The impressive aspect of this study is that it would appear that in an appropriate context, measurable change in reading behavior can be achieved within a short time.

However, this research does not specifically identify what changed within the students' reading and/or thinking, why it changed, how stable the change is over time, or how much transfer there is to actual course reading comprehension. It is also not clear to what degree students learned and/or learned to *apply* formal thinking strategies while reading. Reading research including pre- and posttest measures of formal thinking as well as reading skills could be very enlightening. This research, however, does provide sufficient evidence to warrant continued exploration of both the DRTA workshop format and

a proposed Piagetian basis for advanced reading tasks.

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CRITICAL THINKING: THEORIES AND STRATEGIES IN READING, ENGLISH, AND MATHEMATICS

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In his article "The 4th 'R' Revisited," Curtis Miles (1981) makes a convincing case for the inclusion of thinking skills within a developmental framework. He maintains that a study of Piaget points to the possibility of enhancing attainment within cognitive levels of development. To the argument that developmental educators do not know the "best" way to teach thinking skills, he counters with the observation that educators do know *some* ways to teach those skills. In the absence of further research, these methods serve as at least a beginning point for instruction.

There are several objections to Miles' theory. The most common objection to the teaching of critical thinking is that developmental students need basic skills instruction rather than instruction in thinking. According to Miles, such a distinction between thinking and basic skills is artificial. He feels that the two are inextricably bound together. One cannot successfully be taught without the other. A second objection is that teaching thinking takes too much time, time which is just not available. However those instructors who have included critical thinking skills as part of their courses have observed that such time is well-spent. They say that the need for re-teaching diminishes as mastery levels increase. Finally, some critics argue that critical thinking is more appropriately the realm of groups other than developmental educators. When it is noted that from 33% to 60% of American adolescents and adults do not operate on a regular basis at the formal operation level of cognitive development, it must be concluded that no group is adequately handling the challenge of teaching critical thinking skills. If developmental educators follow the principles established by Piaget, they can help students develop-

critical thinking while increasing student success in basic skill areas.

Piaget's Theory and it's General Implications

The foremost proponent of an organized model of cognitive development is Jean Piaget who, during his lifetime, studied its orderly progression in children. Consequent to his observations, two principles became evident in cognitive growth. First, the organism strives for increased organizations, and second, it strives for continued adaptation. Adaptation progresses by assimilation and accommodation; the former term refers to the absorption of information without modification of the existing cognitive structure, while the latter term refers to the integration of information with modification of the cognitive structure.

Piaget envisioned that cognitive development ideally progressed in an invariant, multidimensional fashion leading from an immature, concrete, egocentric stance to a mature, abstract person responsive to the needs of others. Each stage brings more of the environment into the realm of personal awareness and expands the person 's world view, level of cognition, and depth of understanding. Each stage is built upon the other, integrating its functions with new aspects of development forming a new, unique Gestalt. Thus, the maturing cognitions are always greater than the sum of their parts.

In formulating this model, Piaget made numerous assumptions, several of which are especially relevant to those involved in teaching developmental students. First, he emphasized that cognition and its consequent intellectual process are actively constructed by the individual. There is no laziness, only persons directed in inefficient and unproductive areas. Second, cognitive development progresses in an invariant, orderly fashion. Great leaps forward, so often advocated by our most persuasive publishers, are not possible. Third, our students progress from the simple to the complex. Instruction needs do the same. Teachers can not present information that develops from the complex back to the simple. Fourth, individuals progress from concrete, conventional reality to abstract, unconventional reality. Last, most human endeavors begin with activity without thought and progress to thought without activity.

Many of our most common practices in developmental studies ignore these principles, many of which are 50 to 75 years old. We show a fascination with the abstract, which should be commonplace to us, and assume that our students can match our efforts with little effort. For example, it has become commonplace for our developmental classes to utilize computers to teach early reading skills, only for the instructors to become frustrated because it requires hours to ex-

plain the abstract sequential commands to the students.

Piaget, among more prominent contemporary theorists, leaves us with some insights and recommendations to enhance the education of our students:

1. Developmental students lack the formal thinking skills necessary to achieve on the college level. The fundamental reasoning processes need development prior to the attainment of an advanced curriculum.

2. The developmental student lacks an intellectual interaction with the environment. The interactions are on the plateau that reinforces concrete, conventional thought and avoids abstract influences. The abstract disrupts the mental homeostasis and is met with resistance, opposition, and apprehension. This must be overcome and greater interaction promoted.

3. The concrete attitude has dampened most other abstract pursuits, especially language. Symbol utilization, manipulation, and expression exist at a minimum level, and their growth must be fostered in conjunction with academic subjects. Considerable amounts of material will always remain beyond the grasp to the developmental student until language skills are solidified.

4. Since cognitive development progresses in an orderly fashion, material in the classroom must be presented in a manner appropriate to the student's level. Though this sounds obvious and often receives lip service, in practice it is seldom followed. For instance, a student in a developmental math class will often be given a text with an advanced reading vocabulary and grammar level.

5. Insight is obtained from rote work, and thus rote drill and extensive problem-solving should retain greater emphasis. A lecture approach with two exams a semester is overly abstract. Numerous exams, multiple homework assignments, pop quizzes, take-home problems, and blackboard exercises are more appropriate for developmental students.

6. Motivation is critical to success, and since most developmental students are motivated in nonacademic areas, counseling and training are essential to increase the awareness and depth of understanding. Token programs, contingency contracts, and shaping plans have been most effective.

Finally, Piaget leaves us with an important point. The ultimate gains an individual makes in abstract ability are highly correlated with overall intelligence. The reality of the situation urges us to offer all students a mechanism to achieve to their potential and to enjoy their success. It is a reality that many who attempt may not be successful at the university level, but may still make great gains that allow an enriched life and promote a contribution to society.

Specifically, what does instruction in critical thinking skills entail in the individual content areas of developmental reading, English, and mathematics? Clearly, developmental students are underprepared to compete with the "average" college student. A basic skills deficiency in reading is especially crippling since reading skills are used in all content areas.

What reading skills are necessary for college students? First, they should be able to get the literal meaning of material they read. They should understand the ideas that are directly stated in the selection. This skill is important as a prerequisite for higher-level understanding. The basis of literal comprehension involves such skills as following directions and recognizing stated main ideas, details, causes and effects, and sequences. Little analysis is required of the reader at this level.

Second, the reader must be successful in interpretive reading, which involves reading between the lines, or making inferences. This process entails understanding ideas that are not found directly in the text. The reader must make a mental connection in order to understand the passage. Skills for interpretive reading include: detection of inferred main ideas, cause and effect relationships, referents of pronouns and adverbs, and omitted words. Other skills involve drawing conclusions and detecting the mood, as well as the author's purpose.

Writers, assuming that college students are intelligent and conscious readers, leave many things unsaid. Thus, becoming aware of the clues planted by writers to infer unstated meaning is essential. Many authors preface their statements with such phrases as "it is a proven fact," "it may appear," or "almost always." The reader should search deeper than surface level to get the real meaning intended. In order to do so, there are three types of signal words which can be of help:

1. Type 1: those implying a great deal of doubt about the statement made, such as "sometimes," "it may appear," "perhaps," "rarely," "possibly," "apparently," "maybe," "might," and "seemingly."

2. Type 2: those implying more probability about the subject in question, such as "probably," "almost," "almost always," "presumably," "almost never," "it is believed," and "with little reservation."

3. Type 3: those suggesting that there is absolutely no doubt, such as "absolutely," "always," "never," "definitely," "without reservation," "invariably," "surely," "constantly," "it is proven," and "assuredly."

Finally, the most challenging type of reading—critical reading

—involves evaluating written material, going beyond the material presented, and comparing the ideas presented with known standards. Reading critically depends greatly upon accurate literal and interpretive comprehension. Many times critical reading may require two to three readings before a correct interpretation can be made. As a result, most critical reading is done at much lower reading rates—150 w.p.m. to 300 w.p.m.—than those of other types of reading.

The critical reader must be an active reader who is always questioning, searching, and suspending judgment until he or she has considered all the material presented. Some of the key questions/ideas the critical reader must keep in mind at all times are:

1. Truthfulness and Accuracy of the Material

A. Who is the author and what is his professional background?

B. What evidence is offered in support of the author's points?

C. Does he/she present all side of the situation?

D. Does the author show bias?

E. Does the fact that something appears in print necessarily make it true?

F. What is the publication date?

2. Facts - Opinions

A. Which details are actually facts, and which ones are opinions?

B. Are some of the details a combination of fact and opinion?

C. Are there qualifying words which indicate opinion such as the following: seems, maybe, think, appears, believe, could, and probably.?

3. Figurative Language

A. Is the language mostly literal or figurative?

B. Does the language attempt to construct an image in the mind's eye.

4. Sensing Writers' Biases

A. Does the author show only one side of the situation?

B. Is the author positive or negative toward the subject?

5. Sensing Propaganda

A. Name calling - Does the writer use derogatory labels, such as "yellow," "reactionary," or "troublemaker" to help create negreactions toward a person without showing evidence to support those impressions?

B. Glittering Generalities - Does the author use vague phrases to influence student point of view and yet does not show evidence of facts to support the idea?

C. Transfer Technique - Does the writer try to influence the reader's thinking by using the name of a well-known person, product, or organization?

D. Bandwagon - Is the reader being persuaded to believe a certain way because everybody else believes that way?

E. Cardstacking - Is only one side of the story told?

F. Testimonial Technique - Does the writer try to sway the reader by quoting some popular or respected people?

G. Plain-folks Talk - Is the writer trying to relate the article to the common people in order to gain support?

Since more than half of the time successful college students spend in reading is spent in critical reading, it is of great importance that college students be able to evaluate and react critically to what is read. They must think about the ideas that are directly and indirectly stated and then decide whether to accept or question the author's view. The readers must compare the writer's ideas with their own and then draw a conclusion. Simply because something is in print does not mean that it is true; readers must make that judgement for themselves.

The problem area common to all three subject areas under discussion is critical thinking. The ability to think clearly and logically—or the lack of that ability—evidences itself in subject/skills applications in reading, English, and mathematics.

Much more readily acknowledged than the link between all three areas is the link between the two areas of reading and English. The fact the two have often been taught as one developmental course emphasizes the mutual ground of the two areas. As indicated above, if one is to read effectively, he or she must understand what is to be read—must be able to distinguish between main ideas and supporting ideas and to interpret the information by recognizing relationships between the ideas and drawing conclusions. Also necessary for effective reading is the knowledge of language, not only the denotative meaning of words but also their connotative meaning, and the acquisition of an extensive vocabulary. The reasoning skills which underlie these reading skills are just as central to the composition skills which English courses teach. The connection is clear and obvious: if one can reason clearly, one can read effectively and express oneself in writing clearly and coherently. Thus these two developmental subject areas reinforce each other more obviously than, perhaps, they reinforce mathematics or are reinforced by mathematics. However, the vital role of critical thinking in all three areas is one which needs to be more fully recognized.

Piaget's levels of cognitive development, which introduced this

presentation, present the instructor not only with theories about students' abilities, but with the practical possibilities of applying those theories as well, and it is possible to only briefly sketch the applications possible in teaching composition to developmental students.

First of all, Piaget's levels recognize the levels of complexity involved in the thought processes, from the low-level sensorimotor level through the increasingly more complex levels of the pre-operational, concrete operational, and formal operational levels. The students who enter developmental programs of any kind are generally not yet capable of formal thinking, perhaps because of lack of training or because of lack of ability. Indeed, they are far more likely to function on the second or third level of cognitive development, as evidenced by the types of reasoning which emerge in their reading, writing, or mathematics. In writing classes, the instructor can—by sequencing writing assignments through the various modes of writing, the various methods or patterns of development, the range in topics/content, and the scope of the writing assignment (i.e., the short 100-125 word paragraph first and then the short multi-paragraph essay)—succeed in several matters:

1. The instructor can make the students more comfortable with writing and therefore more confident;
2. The instructor can allow the students to begin writing at whatever cognitive levels they operate on;
3. The instructor can then encourage the students to progress through to more complex cognitive levels as they are able/capable by using assignments which foster such a progression in a natural manner.

Thus, a student could enter a developmental English class with a relatively low level of cognitive thinking—the pre-operational level, for example, as evidenced in the ability to do such things as state, list, select, recall, or name, but not the ability to do such things as explain, describe, identify, or discuss (which are early concrete operational)—and could progress from that beginning level to the concrete operational state, where he or she could ultimately illustrate, demonstrate, and/or apply, through carefully thought-out and sequenced writing assignments.

Since becoming more comfortable in writing is necessary not only for the students simply to gain confidence in writing, but also for them to learn and improve, it seems clear that the instructor should have students write often, every day if possible. Not only should assignments be short, but mechanical flaws should be deemphasized, especially in early assignments. Only later in the term should assignments be lengthened and mechanical matters be given some

import.

Not only should the scope of the writing assignments be sequenced, but the modes of writing as well, going from narration to description to exposition. Narrative has a number of advantages over descriptive or expository modes as the beginning mode. First, there is an inherent order to narration; telling a story of any kind requires that the student tell the story in the order of occurrence, so the order is implicit rather than imposed. Also, narration allows students to use their own experiences in developing the paragraphs. In addition to these advantages, narrative assignments can allow choices from topics of varying levels of difficulty, so that the instructor can gear the assignments to the various cognitive levels of the students. Further, within narration, the instructor can introduce expository methods of development quite naturally, methods such as illustration and process, as well as different ways to order and arrange information, such as time order or order of importance.

From narration, the instructor can progress to description, which requires the student to impose some type of order, such as space order, on the material. Beginning the description assignments with a list of questions about an object (What is it made of? What shape is it? What size? What does it resemble?), the instructor can inductively lead the students into the information necessary for description. After first describing objects in some assignments, the student can then describe places and perhaps later people. Discussions of how to arrange the information in order to fit the supporting material to the students' topic sentences can show the students how one can order similar information in different ways in order to develop specific topic sentences.

Thus one has moved form an inherent order, through discussing the orders inherent in those narrative paragraphs, to imposing order. By this time, students have become far more comfortable with the physical and mental act of writing, have had other practice in grammar, have discovered that they *can* in fact write something and control it. Confidence in one's ability to control rather than be controlled and comfort in the act of writing free the students to then progress to the expository mode and to the more complex methods of development in it—illustration/example, process analysis, comparison-contrast, and cause and effect.

If in the narrative assignments the students have had to support a topic sentence through examples, they have already used one very basic method of developing expository prose—illustration or example. If in some of the other assignments the students have had to tell how something happened, then they have already used yet another method—process. Thus the links between the narrative mode

and the expository mode are already made, and the first expository assignments can overlap by requiring illustration and process.

The instructor can move to comparison-contrast and cause and effect. In each case, assignments can range from two paragraphs, one on comparison, one on contrast (or one on causes, one on effects), to combination comparison and contrast (causes and effects) in one paragraph, to evaluation of items compared (or cause-effect evaluation).

These types of assignments can provide a natural bridge into the short essay. The instructor may take two separate paragraphs on comparison-contrast, for example, then have students write thesis statements, introductory paragraphs, and concluding paragraphs, and then use these as the rough draft for their first multi-paragraph essay.

By using this process, students can work from whatever levels of cognitive development they entered with and progress to more complex levels of thought either on the same cognitive level or another, and this progression is a natural one encouraged through sequencing of assignments and varying of topics. All students will *not* automatically progress to the point required for freshman composition; some may require more than a single semester to move from single paragraphs to multi-paragraph essays; and some may never reach that point. However, many of them will have improved and become capable of more controlled development on the single paragraph level, and all will progress in some manner.

The third subject area in which critical thinking skills can be taught is mathematics. Having already decided that developmental education is an appropriate forum for instruction in critical thinking, it becomes necessary to focus on a few skills which may readily be included in pre-existing developmental mathematics curricula. One critical thinking skill which mathematics teachers can emphasize is recognizing relationships. New topics may be "defused" when they are introduced by identifying their relationship to previously-learned material. A second important skill is that of classifying. Every mathematics teacher has heard the question about word problems, "Do we add or subtract on these?". Students should be taught to classify problems according to skills and concepts involved.

Another critical thinking skill in math is that of separating process from product. Students who focus on the answer rather than on the procedure of reaching an answer develop problems in structuring solutions. Many teachers have observed that students who focus on the answer stop the thinking process altogether. Estimation is yet another essential skill to be taught. Mathematics teachers traditionally emphasize "the right answer." Real-world applications, however, often require only a good estimate or approximation, and

students need to be able to gage for themselves whether or not their answers are reasonable ones.

A final critical thinking skill which might be considered as appropriate to developmental mathematics is that of manipulating alternatives. Many students view mathematics as highly rigid, and believe that there is only one way to work a problem; thus, if they do not know "the way," they are out of luck. Teachers should let students know that mathematical thinking is flexible, that there is more than one correct way to approach most problems.

In every discipline, whether English, reading, or mathematics, critical thinking skills are not a separate class of abilities to be taught apart from traditional course content. Rather, these thinking skills are frequently already a part of the curriculum. The role of the instructor, then, is to consciously emphasize the thinking skills as they arise within the natural development of the class. With this extra effort, teachers become increasingly aware of the cognitive development processes, and, consequently, students will also recognize the value of thinking skills to their overall development not only as students but as reasoning individuals.

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THE VALUE OF MAIN IDEA CLUES FOR USE WITH COLLEGE TEXTBOOKS

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One of the prime skills developmental reading students need to acquire is that of locating main ideas. Almost without exception, developmental reading texts devote space to this skill. Most texts seem to agree that finding the main idea is a key to determining what to read and remember. Indeed, locating main ideas is critical in textbook reading. The problem is that developmental reading texts do not agree on means or clues for locating main ideas, and there is a lack of research to document the usefulness of those clues listed in texts for finding main ideas.

Literature Review

Perhaps the greatest agreement on main idea clues is on that of position. Of thirteen current reading texts surveyed, all list the probability of finding main idea in the first sentence of a paragraph (Boning, 1977; Bracy & McClintock, 1980; Flemming & Currie, 1978; Giroux & Williston, 1974; Joffe, 1984; Kolzow & Lehmann, 1982; McWhorter, 1983; Niles, Bracken, Dougherty, & Kinder 1965a, 1965b; Pauk, 1975; Sotiriou, 1984; Waters, 1982; Wiener & Bazerman, 1982). Those which list percentages indicate that the main idea is found first slightly more, or slightly less, than 50% of the time. All thirteen list the last sentence as a possible place to find main ideas. Bracy and McClintock go so far as to indicate that main ideas are in first or last position 80% of the time. Only one text (Waters) mentions in passing that, when a main idea is not first or last, students should check the second sentence.

Other position clues cited are middle of paragraph, or unstated main idea. One is left wondering how helpful these clues are when none of these positions is rated as more common than the others. If

we tell a reading course student that the main idea could be first, last, in the middle of a paragraph, or not stated, we have not been of much help. And a third of the books checked do little more.

Clues other than position are mentioned in eight of the texts. However, there is little agreement as to what these clues are. Four cite repetition of idea (Bracy & McClintock, Kolzow & Lehman, McWhorter, and Niles et al.). Three indicate the importance of subheadings (Kolzow & Lehman, McWhorter, and Sotiriou). Two list key words (McWhorter, Sotiriou). Two others suggest examples as clues (Joffe, Waters). One (Waters) implies the importance of highlighted words. In short, there is little agreement on these clues or on their value.

Further, the research on which these clues are based seems nonexistent. A check of the *Education Index* and ERIC indicates no recent research on main idea clues in college textbooks. Clearly, there is a need to establish a set of clues which are both useful and effective in locating the main ideas in college textbooks.

Purpose

Our purpose in this study is to ascertain whether or not the techniques or clues for locating main ideas which are listed in developmental reading texts work. And if so, which clues seem more significant than others? Finally, are there any clues not listed in developmental reading texts that seem useful?

Procedure

For this study, we selected three of the most commonly used introductory sociology textbooks: DeFleur, M.L., D'Antonio, W.V., & DeFleur, L.B. (1984). *Sociology human society* (4th ed.). New York: Random House; Robertson, I. (1981). *Sociology* (2nd ed.). New York: Worth; Tischler, H.L., Witten, P., & Hunter, D.E.K. (1983). *Introduction to sociology.* New York: Holt, Rinehart and Winston. These books will be referred to hereafter by name of the primary author. In each book, we looked at chapters on culture, the family, and social inequality, basic topics important in all introductory sociology courses and treated somewhat uniformly in most mainstream textbooks, including those listed.

Our procedure was to read through each of these chapters paragraph by paragraph searching for main ideas. By definition, a main idea is that sentence which is general enough to include all of the information provided in a paragraph, but not so general as to be useless to those trying to understand the paragraph. Main idea can

never be a question because, although a question can focus on the subject of a paragraph, it contains no controlling idea to establish what will be said about the subject. Main ideas must be statements, not questions. They must contain a subject and a controlling idea.

When main ideas were found, we recorded their position in the paragraph as well as all clues used in the paragraph which would point to the main idea. In all cases, statements which were too general to be useful were discarded in favor of more specific sentences if these sentences also covered the content of the paragraph.

These were the principles governing our selection of main ideas. If no main idea was stated, we recorded that too. We did not check for main ideas in chapter summaries because summaries, by their very nature, tend to be one sentence paragraphs or to contain a wide range of sentences with little unification. We did not consider whether main ideas found were important to an understanding of the chapters or not, but rather focused on whether they fitted the formal definition of main ideas.

Finally, we subjected data gathered to chi square analysis, where appropriate, to determine if there were significant differences in the frequencies with which main ideas were found in the various paragraph positions. Chi square analysis was also employed to determine if there were significant differences in the frequency with which all main idea clues were found in content area paragraphs. The confidence level was set at p less than .01. The two-tailed test tables were used to ascertain the significance of the chi square values since only the difference was sought (Isaac & Michael, 1982).

Results

The prime clue for finding main idea, as listed in reading texts, was position. First and last positions were the two most frequently cited, with first position indicated as the most common placement. We broke down main idea placement using all of the various positions mentioned in one or more of the reading textbooks we reviewed. Table 1 shows frequency of main idea placement. Table 2 indicates statistical significance of various placements.

Table 1 shows a remarkable consistency among the books checked. As might be expected, main idea showed up in the first position most frequently (52.9%). Main idea in the last position appeared with the second greatest frequency (18.8%). However, the combined frequency of these two positions (71.6%) was not as great as the 80% suggested by Bracy. Perhaps the greatest surprise is that the main idea appears second so frequently (15.9%). This position was mentioned in one sentence in only one of the reading texts examined

(Waters, 1982). Main idea appears in all other sentence positions com-

Table 1
Location of Main Ideas in Textbook Paragraphs

Book	First	Second	Last	Other	Not stated
DeFleur n=274	133 (48.5%)	56 (20.4%)	49 (17.9%)	23 (8.4%)	13 (4.7%)
Robertson n=258	136 (52.7%)	39 (15.1%)	56 (21.7%)	16 (6.2%)	11 (4.3%)
Tischler n=297	170 (57.2%)	37 (12.5%)	51 (17.2%)	25 (8.4%)	14 (4.7%)
Total n=829	439 (52.9%)	132 (15.9%)	156 (18.8%)	64 (7.7%)	38 (4.6%)

bined or is not directly stated from 10% to 13% of the time. This indicates that these positions have little importance. This lack of importance becomes clearer in an examination of Table 2.

Table 2
Chi-Square Values for Various Main Idea Positions

Position	First	Second	Last	Other	None
First	——	125.88*	104.97*	200.66*	91.76*
Second		——	1.21	13.37*	28.95*
Last			——	22.17*	40.64*
Other				——	3.53

* = statistically significant at the .01 level

Not surprisingly, main idea appears first to a degree statistically significant when compared to all other categories. What is more surprising is that there is no statistical significance between placement of main ideas in second or in last position. Both of these positions were statistically significant when compared to placement

of main idea in other paragraph sentences or paragraphs lacking explicit main idea statement.

The relative importance of placement of main idea in the second position deserves additional comment. Main-idea-second occurs most frequently when the writer begins a paragraph with an extremely general statement, then narrows the focus in the second sentence to the precise area to be covered in the paragraph. For example, in the Robertson text's discussion of changing American attitudes toward sex, we find, "The changes that have taken place in recent years are probably fewer than are generally realized. One that is quite evident, however, is the rapid decline of the double standard . . ."(p. 216).

The rest of the paragraph deals with the decline of the double standard. The first sentence says that few changes have occurred in attitudes toward sex. Sentence 2 provides the specific focus on one change—the rapid decline of the double standard. Thus, the second sentence provides the main idea.

Main-idea-second also appears when a question begins a paragraph and its answer immediately follows. In Robertson's discussion of the linguistic relativity hypothesis, for example, we find the following paragraph: "In what ways do languages "slice up" and organize the world differently? The most common differences are in vocabulary: some languages have words for objects and concepts for which other languages have no words at all..." (p.73).

The rest of the paragraph gives a series of examples which show vocabulary differences in several languages. The second sentence provides the main idea by answering the question asked in the first sentence. It gives the rest of the paragraph its focus on vocabulary differences.

While it seems unsurprising that so few paragraphs bury the main idea in the middle or exist without main ideas, reading texts do not indicate this relative rarity, but generally treat these positions as real possibilities. Further, paragraphs without stated main ideas seldom contain important material. These paragraphs, primarily occurring at the start of chapters (or chapter sections), usually tell stories or give examples leading into generalizations in following paragraphs. The other place in which main idea-unstated occurs is in paragraphs of elaboration, which add details or examples to what appears in earlier paragraphs.

Other clues

Clues other than position have been suggested in many texts, though there seems little agreement on these clues and their importance. Table 3 lists each clue cited in developmental reading texts. To those clues listed in these texts, we have added one, "question and

answer," a minor, but effective aid in locating main ideas. This clue occurs when the author asks a question, then procedes to answer it in the next sentence. The example above from Robertson's section on linguistic relativity shows how this clue works.

Table 3
Appearance of Clues for Finding Main Ideas with Percentage of Paragraphs in Which Each is Used.

Clue	DeFleur (n=274)	Robertson (n=258)	Tischler (n=297)
Examples	71.2%	64.0%	67.9%
Position (first)	48.5%	52.7%	57.2%
Repetition	28.8%	52.0%	30.3%
Key words (numbers)	16.4%	38.0%	22.3%
Subheadings	20.8%	34.0%	21.1%
Position (last)	17.9%	21.7%	17.2%
Position (second)	20.4%	15.1%	12.5%
Highlighting	8.0%	12.0%	15.1%
Question/answer	4.7%	7.0%	5.4%
No clue	7.3%	3.0%	5.4%
Total	244%	299.5%	254.4%

Note: Since a paragraph could contain more than one main idea clue, totals are higher than 100%.

Adding the percentages of paragraphs in which the various clues appear indicates that a large percentage of the paragraphs in each text contained more than one main idea clue. The authors were sending a clear verbal message on what was important. The existence of so many clues also indicates the importance of student knowledge of main idea clues.

Examples provided the best clue to main ideas. Examples ranged in length from a few words to entire paragraphs. Sometimes there was a single example (brief or lengthy); sometimes there were several. No matter the case, examples seemed to indicate important material. In over 60% of the paragraphs in all three books, they pointed toward

main ideas.

Repetition was also a major clue. Sometimes repetition was limited to a term which appeared throughout the paragraph; sometimes a whole idea was repeated. Repetition might occur in only the first and last sentences, or information might be repeated several times. Almost without exception, a repeated idea was the main idea.

Key words and subheadings were about equally common as main idea clues. Some developmental reading texts give lists of key words which serve as main idea clues (Sotiriou, 1984, McWhorter, 1983). To these word lists should be added certain numbers. Several paragraphs were numbered (for example, Tischler's listing of different subcultures, pp. 93-96). Other paragraphs began with "First" ("Second," "Third," etc.). When this was the only number word in a paragraph, the sentence containing the number was likely to be the main idea.

The importance of subheadings is referenced in many study skill books (See, for example, Shepherd, 1982, p. 135). The reason that they appear so low on the list is that there were so few of them in relation to the number of paragraphs.

Highlighted words—those appearing in different style or color type—have frequently been cited as important vocabulary clues. However, as Waters (1982) indicates, the purpose of a paragraph may be to define a term. In such cases, the term is frequently highlighted. Sometimes, the whole definition of a term is highlighted, while the rest of the paragraph expands on that definition. Thus, highlighting is many times a main idea clue as well as a vocabulary clue.

Conclusions

1. While it seems true that main ideas tend to cluster at the start and end of paragraphs, more emphasis needs to be placed on the second sentence as a main idea clue. This is particularly true when the first sentence is extremely general, or when the first sentence asks a question. Further, this study indicates that in textbooks placement of main ideas in any other position but first, second, or last is unlikely. Students need to be alerted to the rarity of middle placement and to the infrequent occurrence of paragraphs without main ideas. This is not done at present.

2. Other clues for locating main ideas work. Since none of the reading texts checked contained all of these clues, it is apparent more emphasis needs to be placed on them. This is particularly true of examples (cited by only two texts) and repetition (cited by only four). The scarcity of paragraphs in which no clue exists indicates the need for students to be aware of and use main idea clues to find impor-

tant material in their textbooks.

Recommendation

This study has dealt only with formal main ideas (those fitting commonly accepted definitions of main ideas). Further research is needed to determine the relationship between formal main ideas and substantive main ideas (statements which contain material vital to understanding the chapter). Every paragraph which has a main idea does not necessarily contribute to a substantive understanding of text material. While we can see that main idea clues work, a study of substantive main ideas would cast more light on the value of using main idea clues in reading textbooks.

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BENCHMARK TO ACADEMIC LITERACY: CRITERION REFERENCE TESTING IN COLLEGE READING

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For institutions committed to both open access and academic quality, developmental reading programs play a critical role in guaranteeing that students are prepared for rigors of the undergraduate curriculum; the institutions depend on the programs to exit only the students who are ready for college work, that is student who can make at least a "C" in introductory freshmen courses. With this guarantee, the institution feels confident that freshmen courses can be built on the assumption that students are academically literate, i.e. able to engage in intellectual activity with a textbook. Without such a guarantee, instructors of freshmen courses will find students in their classes who are not yet ready to engage in academic learning. In such instances, one of two things will happen: (1) large numbers of students will ultimately fail, or (2) instructors will drop standards.

Structured very differently in different settings, college reading programs hold academic preparation for collegiate work as their common objective. These programs play several important roles; among others, they are guardians of academic standards, gatekeepers to institutional quality. College reading programs create a bridge from basic academic deficiencies to success.

Critical issues for reading programs include not only *what* but *when*. *What* programmatic thrusts should the coursework take to move a student to academic independence, and *when* is the student ready for independent academic pursuit? In order to address these two issues, the Developmental Studies Reading Program at Georgia State University first asked the program faculty to discuss its educational philosophy. The faculty agreed that the reading program serves both the student and the institution, and simply stated, concurred that its mission is to help students understand college textbooks in order to succeed in the academic environment.

The next problem was to decide how this statement of purpose could be specifically implemented. The faculty needed to respond to the question: what do students need to learn in order to read and understand college textbook material?

This question necessitated an analysis of actual college freshman textbooks assigned in history, psychology, sociology, and science courses, as well as conversations with professors who teach introductory freshman courses. The review of the college textbooks brought surprises. Suddenly, tone, mood, and character development seemed to fade in significance to identification of main idea and selection of significant supporting details. Vocabulary development moved from being an important issue to being a critical issue.

Curriculum Design

At Georgia State University, students are placed in developmental courses according to SAT scores, high school grade point average, and a state-wide college test called the Basic Skills Exam. From previous experience, the faculty knew that many students would need two quarters of instruction to meet the exit standard, but that many others would be ready for academic coursework after only one quarter of instruction. Thus a two course sequence was created, and placement in the courses was based on scores on the Basic Skills Exam. Students needing two quaters of instruction were placed in the basic course and were expected to move the upper-level course. Students projected to need only one quarter of instruction were placed in the upper-level course upon admission.

After the teaching units were selected by the faculty, the curriculum seemed to divide itself into two areas: main idea and inference. For teaching and testing purposes, the courses were organized around the two themes with the faculty recognizing, of course, the overlap in applications. For the first half of each course, for example, teaching units focus on helping students answer the question, "What is the main point the author is trying to convey and what are the significant supporting details?" For the second half of the course, teaching units help students look beyond what is explicitly stated to answer questions like, "What was meant by what was said?" "Why was it said?" "What were the assumptions of the author?"

To differentiate the two reading courses in the sequence, both the materials and the reading strategies taught in the upper level course are more sophisticated than those taught at the lower level. For example, main idea instruction in the lower level course might begin with sentence restatement, whereas the upper level course would include structure and notetaking skills. For inference skills, lower level

students move quickly into identifying biases, recognizing an author's purpose, and drawing conclusions and making generalizations.

For the entire course, on both levels, vocabulary development is stressed as a matter of great importance and is taught separately as well as incorporated into every teaching unit. The vocabulary development is designed to provide a foundation on which students will be able to build discipline-based vocabularies in their introductory courses.

Developing the Benchmark

Once the curriculum topics were decided and teaching strategies developed, the faculty determined that it needed an "exit measure," a criterion reference test, which would indicate whether students had developed sufficient reading proficiency to perform successfully in freshman-level academic coursework. The test would not need to provide a normed range of scores or diagnostic measures, but rather should be a straight-forward measure of whether the student was ready or not to move on. Because the lesson in reality testing of the demands of college textbooks had been so dramatic in curriculum development, the faculty determined that it would need to set its exiting criteria against the reading proficiency of students admitted to introductory freshmen courses. Hence, as the exit measures were developed, they were based on actual textbook passages required of students in introductory courses at the institution. In addition, benchmark scores on these measures needed to be set based on the performance of regularly admitted students. Students leaving the Developmental Studies reading program had to score as well as the average freshman admitted directly to university coursework.

In order to give students maximum feedback, the faculty decided that the measure should be administered in two parts: at mid-term of the upper-level course and at the conclusion of the upper-level course. Students would not be able to exit the course unless they achieved a pre-determined level of mastery in both parts. Because students benefit from maturation and from the overlap of material from the first half of the course to the second, the faculty believed that students should be allowed to show proficiency on the first test even at the end of the quarter. Thus a "retake" procedure was devised. To be fair to all students, students were allowed to retake either test (but not both), and only the higher score was recorded. (This second opportunity, however, did necessitate that two different forms of each test be created.)

In constructing the tests, the test writers used several guidelines. First, because the curriculum is based upon introductory course

expectations, the test passages came from introductory course textbooks. (Copyright permission had to be obtained for each.) Second, the test items needed to reflect the reading strategies taught in the course. Thus, passages were chosen from psychology, sociology, history, political science, and biology. The appropriateness of the passages became critical when the writers began to consider test items. An appropriate passage had to develop a complete thought and have enough substance to lend itself to the development of five or six questions of the type determined by the curriculum.

Once the passages were selected and questions written, two instructors other than the item-writer reviewed each item for relevance to test objectives, clarity and refinement. The tests were then given as a pilot to students in introductory social science courses. The results were submitted to item discrimination and item difficulty analyses.

At this point in test item development, the test writers began to adjust test difficulty in order to achieve a test score easily interpretable to students. Because students have a mindset that 70% correct is a passing score, the writers adjusted the level of difficulty in hopes of achieving a benchmark score close to 70% correct. Analysis of test results both of the students leaving developmental reading courses and of students enrolled in freshman social science courses was made. The items were edited accordingly. The test writers anticipated that the revised instrument would yield a mean score for a random sample of social science students of approximately 75%, and therfore represent the median "C" student. The benchmark score would then be set to account for testing error. In addition, the benchmark score needed to take into account the fact that the grading patterns for social science classes do not represent a normal curve. Using the four classes from which the sample for final analyses was drawn, the grading pattern was shown to be positively skewed: 15% A's, 33% B's, 33% C's, 12% D's, and 3% F's.

After final editing, the tests were deemed ready for administration and were given to a random selection of introductory social science students in one psychology, one political science, and two sociology classes.

The group means and measure for error for the two parts of the examination are reported below.

Table 1
Mean and Standard Error for the Two Measures of Reading Skill.

Test Type	Mean	Standard Deviation	Standard Error	Number
Main Idea	78.8	11.4	1.5	61
Inference	78.6	11.5	1.5	61

The benchmark was then set at 70, to represent the minimum level necessary to earn a grade of "C" or better in freshman social science courses. Students exiting from Developmental Studies reading must have an average score of 70% correct on a form of the main idea test and the inference test. While the mean score for the students in the social science classes was higher than anticipated, the test developers felt justified in establishing the benchmark of 70 to accommodate the positively skewed grading curve.

Validity assessments for the testing program are based on content and face validity. Professionals in both reading courses and introductory social science courses agreed on the skills students must have in order to succeed. In addition, it was shown that students performing adequately in the social science courses possessed the skills tested by the reading measures.

While some might expect that the reading instruments would have predictive validity as well, such is unreasonable. Reading skills are necessary for success in colleges courses; they are not sufficient. Students making poor grades do so for a variety of academic and non-academic reasons, only one of which is their level of academic literacy. The analyses of extreme test scores and grades earned in the course in which students were tested revealed that three students with high reading test scores failed the course, but that no student with a test score less than 70 made an "A" in the course, suggesting that the reading test does tap one necessary skill for success in academic coursework.

Furthermore, the tests cannot be expected to have predictive validity because the range of ability level in the social science courses had already been restricted by the admission/placement decisions for entering freshmen. Students predicted, on the bases of high school grade point average and SAT scores, to have difficulty in maintaining a 2.0 grade point average had been referred to the Developmental Studies program before being admitted to the freshman curriculum. Few in the freshman courses would be expected to score less than 70 as all had proven a level of acceptable skills at the time of admission or during developmental reading courses.

The predictive value of the test can be measured best by the suc-

cess of Developmental Studies reading students in freshman social science courses. Consistently, since the tests were implemented, 85% of the students exiting Developmental Studies reading have been successful in their first social science course. Table II below indicates the pattern.

Table 2
Success of Developmental Reading Students in Freshman Social Science Courses by Quarter.

	% of former reading students who registered for and passed social science courses				% of non-reading students who registered for and passed social science courses			
	SPG	SUM	FALL	WIN	SPG	SUM	FALL	WIN
1983-84	81	85	85	83	92	92	92	90
1982-83	87	80	85	90	88	92	92	84

Since Developmental Readomg students are considered high risk students, these results suggest that the program has dramatically reduced the risk of failure for these students and that the benchmark for skill development has set a standard high enough for the institution to maintain academic integrity.

Implications

The efforts of reading faculty have had significant implications for the program and for the university.

1. Developmental Studies reading programs have an obligation to provide a strong curriculum, based on the needs of the freshman curriculum at given institutions. The effort to develop an institution-specific criterion reference measure provided an opportunity for the reading curriculum to be evaluated in light of the demands and objectives of currently taught social science courses.

2. The ties with university faculty that developed when the reading faculty began the project have proved invaluable. Faculty outside developmental reading have begun to see the program and its students in a more positive light. More importantly, they know what to expect from their students and often refer those whom they detect to be deficient to the reading program. Indeed, they recognize the role of the developmental program as quality control and guardian of standards.

3. The test development drew the faculty together, both in coming to a consensus on the goals of the curriculum and in writing and refining test items. Although faculty members still maintain their individual teaching styles and use a variety of different materials and techniques, there is the assurance that the goals and objectives for the various sections of the reading courses are the same. For a program that is dependent upon part-time instructors and graduate students for a significant proportion of the instruction, this consensus is imperative.

4. Because the tests are based on college textbook materials and the strategies needed for academic literacy, students feel that the demands of the program are fair and that they are being asked to measure up to standards which are realistic.

Students are generally pleased with the program. On admission many students were disgruntled that the institution required them to enroll in the developmental program. Once the project was complete, however, the faculty and counselors could point to evidence showing that the students need the program and that they benefit from it.

SUPPORT FOR READING AND WRITING AS SHARED DEVELOPMENTAL PROCESSES

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While reading and writing are both language processes and a natural relationship could be assumed, they have generally been studied and taught separately. The focus has been upon the differences of the two as production and reception processes. The writer sends a message using the written code; the reader receives the message by breaking the written code. This perceived difference led to their separation in the curriculum, and a system of education that not only separates but isolates areas of study has not encouraged interaction. Teachers have been trained as specialists in one and not the other. Few people have crossed the boundaries of their disciplines to study or integrate these language processes (Petrosky, 1982).

Recently, however, researchers and practitioners have begun to reexamine assumptions about the reading-writing relationship. The inclusion of The Reading Writing Relationship as an ERIC decriptor in 1981 attests to this fact. As one looks at this descriptor, a series of questions comes to mind. What is the source of this new interest? Is there theoretical and empirical support for a strong relationship between the two? If so, what are the instructional implications?

Source of Interest

A review of both reading and writing literature reveals that renewed interest in the reading-writing relationship is coming from a changed conceptualization of both acts. These conceptualizations appear to be the result of a shift to the study of the processes of the mind, the thinking that underlies the act, in both fields.

Reading is no longer perceived as a simple receptive process in which the reader passively receives some absolute meaning the writer put on the page. Instead, it is viewed as a largely generative process in which the reader constructs his/her own model of the text (Wittrock, 1975; Spiro, 1980; Petrosky, 1982; Schank, 1982). Even what appears to be the most literal statement requires the reader to construct meaning using prior knowledge and experience. To illustrate this, Schank (1982) notes that the simple statement, "John wants an aspirin" leads to the inferences that John has a pain and John

believes that aspirins relieve pain, ideas that are not on the page. This construction of meaning is not only influenced by the reader's prior knowledge but by his/her world view. World view entails more than just prior knowledge of the subject; it includes results that govern all behavior. The context or situation in which the reading act occurs also influences comprehension because, from this, the reader gets his/her concept of the task and perspective. This conceptualization of reading negates the idea of absolute meaning put in the code by the writer and recognizes the idiosyncratic nature of comprehension. The question is not did the reader understand, but what did he/she understand?

The conceptualization of writing has been expanded beyond simple correct presentation to the recognition of writing as a meaning construction process (Cooper & Odell, 1978; Beaugrande, 1979; Flower & Hayes, 1981). The old notion that writers begin with something to say and then are simply concerned with correct form has given way to the idea that writers begin with their own knowlege, experience, and world view and that in the process of writing they construct meaning. The product of writing is most often a restructured form of one's knowledge and experience, new insights. Like readers, writers are influenced by their perception of the task and the situation in which the act occurs. Writing can be a problem-solving, concept-forming process. Success is dependent upon understanding and employing the appropriate thought processes. This new conceptualization of writing relegates correctness of form to a secondary position.

It is not difficult to notice similarities of reading and writing in this brief decsription of the two. Reading and writing theorists working separately began to notice such similarities and began calling for clarification of the connection between reading and writing.

The Reading-Writing Connection

Theories describing the relationship beyond the obvious dependency on the same code are very new; and, as one might expect, still quite fragmented. Two of the most cogent explanations are (a) Reading and writing are analogous meaning-composing processes (Petrosky, 1982; Tierney & Pearson, 1983; Wittrock, 1983), and (b) Experience in one influences the other (Elkind, 1976; Chomsky, 1979; Shanahnan, 1980; Petrosky, 1982; Eckhoff, 1983; Smith, 1983).

Analogous Meaning-Composing Processes.

Tierney and Pearson illustrate the meaning-composing relation-

ship by delineating aspects of the composing process held in parallel by reading and writing. They use some essential element of effective composing: planning, drafting, aligning, revising and monitoring.

Planning involves goal-setting and knowledge mobilization, which includes setting purposes, evaluating the current state of knowledge about the topic, focusing or narrowing topics and goals, and self-questioning. A writer's goals may be "procedural (e.g., how do I approach this topic), substantive (e.g., I want to say something about how rockets work), or intentional (e.g. I want to convince people of the problem)." The readers's goals may follow the same pattern: "procedural (e.g., I want to get a sense of this topic overall), substantive (e.g., I need to find out about the relationship between England and France), or intentional (e.g., I wonder what this author is trying to say)" (p. 571). Both the reader and the writer make adjustments as they proceed. Goals interact with the knowledge that is mobilized by the reader and the writer to influence what is produced or understood in a text.

Drafting and alignment are also shared processes. Drafting is the refinement of meaning. Just as the writer might use a first draft to explore what he/she wants to say, a reader may scan the text in a preliminary way to explore the range of knowledge and goals to call upon. This could be considered the first draft of the model of the text that the reader is constructing. Alignment is the stance a reader or writer assumes in collaboration with the author or audience. For the writer a stance might be intimate, challenging, or neutral; and collaboration might be through a character or as an observer. For the reader a stance might be sympathetic, critical, or passive; and collaboration might be as observer, participant, or character. Authors note that the alignment the reader adopts influences what is recalled. Good readers and writers try out different alignments as they seek to construct meaning.

Trying out different alignments is a kind of revising. Revision is commonly thought of in terms of writing, but Tierney and Pearson posit that revision is also an important behavior in reading. "If readers are to develop some control over and a sense of discovery with the models of meaning they build, they must approach text with the same deliberation, time, and reflection that a writer employs as she revises a text" (p. 576). Revision for the writer is much more than editing surface errors; it is repeatedly rereading, re-examining, deleting, shaping, and correcting to achieve the desired emphasis and proportion.

The last parallel between reading and writing offered by Tierney and Pearson is monitoring, the removing of oneself from the text to

evaluate what has been created. Both the good reader and the writer seek that inner voice that counsels, judges, and prompts in terms of the goals either has set.

Influence of Experience In One On The Other.

A second theory of the relationship of reading and writing is simply that experiences in one process will have an effect upon the other. There are those who claim that writing experience has a positive effect on reading achievement (Elkind, 1976; Shanahan, 1980; Petrosky 1982). Rehearsal provided by writing fixes orthographic-phonemic patterns. Writing also increases awareness of grammatical structures, expecially syntactic complexity. Further, numerous studies have shown a high correlation between use of complex sentence patterns and reading ability. Closely related is the idea that manipulation of organizational structure enhances the use of such structure in comprehension. Written responses to what has been read can be an idea-clarifying process. Writing also provides an opportunity for students to experiment with words, to test their understanding, and to make usage more precise, if feedback is available. Lastly, interest in reading is often preceded by interest in copying in young children, and need to write often encourages students to read to gather information to write.

Others proclaim the positive effect of reading experiences on writing. Eckhoff (1983) posits that punctuation as well as complex language patterns are learned through reading exposure. Frank Smith (1983) concurs. Smith states, that through a certain kind of reading, writers may learn all the intangibles they know about writing. Writing is too complex to be taught totally through formal instructional experiences. For example, there are too many spelling rules with too many exceptions to be learned in isolation. Also punctuation and capitalization and rules of grammar are too circular to be learned outside of natural experience. In addition, there are too many genres with formats that vary with purposes to teach them all formally. Murray (1982) notes that a writer cannot write without reading and that good writing requires some rather sophisticated reading, which may be quite different from simply decoding someone else's finished text.

Synthesis of Research

As congent as the above theories may seem, the responsible question is whether there is research to support them. In 1983 Sandra Stotsky synthesized the findings of research on the reading-writing realtionship. She discovered that most of the research had either been

correlational or had sought to examine the influence of writing on reading or the influence of reading on writing. Most of these studies used expository or informational reading materials and essay writing as measurements, focused on higher educational levels, and were concerned with instructional intervention. According to Stotsky, the results of correlational studies indicate: that better writers are better and more prolific readers than poor writers, and that better readers tend to produce more syntactically mature writing than poorer readers.

The results of the empirical studies suggest:

(1) Teaching writing or using writing exercises primarily to improve writing and measuring the effects on reading does not significantly affect reading performance;

(2) Using writing activities or exercises specifically to improve reading comprehension or retention of information in instructional material almost always produces significant gains;

(3) Providing reading experiences in place of grammar study or additional writing practice is as beneficial as or more beneficial than either grammar study or additional writing practice;

(4) Using literary models produces significant gains in writing;

(5) Seeking to improve writing through reading instruction alone is generally ineffective;

(6) Writing instruction and writing activities designed to improve free writing have a limited effect on reading comprehenson.

Instructional Implications

A number of instructional implications can be gleaned from the conceptualizations, theories, and research findings discussed to this point. Perhaps the most obvious is that there can be some benefit in teaching reading and writing together. Other implicaitons are:

1. Both reading and writing need to be taught as thinking processes. The concern should be with effective thinking strategies for making meaning within the constraints of the text and the reader or writer's purpose, not with discreet, isolated subskills.

2. The largely idiosyncratic nature of meaning construction must be recognized. Students may be given opportunities to clarify their own understanding by substituting structured written responses for comprehension questions. First, they may be asked to give their interpretation and then to substantiate it with references to their prior knowledge and to the text. Students may be asked to judge each other's responses in terms of possible interpretations.

3. Though correct form is important in the writing process, it is

not the most important part and should be the last concern, not the first.

4. It is beneficial for students to analyze literary models and write papers that are close to what they might need to produce in their real-world experiences. Students produce better products when they perceive the task as being personally meaningful. Also, the what-is-your-favorite-television-show writing experience does not necessarily transfer to a persuasion paper for a political science class.

5. Readers and writers both can benefit from being led through the composing stages so that they see that composing effectively as a reader or a writer is a multi-staged process.

6. Reading and writing experiences which will expand prior knowledge and world view are essential.

7. Reading and writing demand active involvement between the reader and author; thus, practicing taking the perspective of the other can enhance the construction of meaning in either process.

In summary, there is theoretical and empirical support for teaching reading and writing together. However, one must recognize that there is not yet a comprehensive description of the relationship between the two and that much more research needs to be done. Much of this can come from those who do teach the two together.

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NOTEMAKING: MORE THAN A STOREHOUSE OF DATA

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The ability of community college students to extract and apply contextual information from texts is a vital factor in their success in college. However the instruction in these skills in a developmental reading course and the testing for them differ from one institution to another, and many times varies from instructor to instructor.

Some instructors believe that each sub-skill of reading should be taught separately. During the past decade, this approach has generally been the case. However, one problem connected with this approach is that in order to teach these discrete skills, short paragraphs are used to demonstrate to students how to pick out main idea sentences, write inferred main ideas, and note words in context. These small paragraphs not only exist in isolation, out of context, but many times tap only the literal level of comprehension. Nevertheless, it is frequently thought that if students can separate these skills within a paragraph, somehow they'll be able to integrate them when reading larger selections.

Other instructors believe that the skill of reading is dependent upon the meaning the students take from the text in front of them. Hence, in order to get at the meaning, students need to work with a whole body of information, not just discrete paragraphs in isolation. This "body of information" needs a beginning, a middle, and an end so that students can see the author's organization of the selection and can better understnad the context in which it is written. The meaning the student takes from the text is dependent therefore on the text itself, the student's view of the organizational aspects of the text (the arrangement of the main ideas and subordinate ideas and patterns of writing) as well as the experiential background knowledge that the students bring to the reading.

Change in Focus

Within the past two years the reading and study skills faculty of our department has attempted to adopt this latter holistic approach, whereby the focus of the teaching of reading as a skill is not separate from the teaching of reading as it applies to college content

material. Frequently, students in our non-credit reading courses underrate these courses because they cannot relate the reading activities to any credit course work they are taking. Consequently, they either skimp on homework or excuse themselves from it by saying, "I had to study for an exam in my other course," or, "I had a personal problem . . . "We hoped by using reading materials based on actual textbook chapters lengthy essay-type articles, and paperback books similar to the type found on required reading lists, students would see that the reading course provides an aid to studying and reading in other courses. This shift in focus then required a test instrument that would satisfy this holistic approach and also test skills in an integrated manner.

We began feeling our way by using textbook chapters for testing. In our first attempt, the students were asked to perform certain functions in the skill areas with the reading material at hand. For example: "Spend a few minutes previewing the chapter, then list the major sections in which the author has divided the chapters. According to paragraph 5, explain the concept of . . . ; write the main idea of . . . ." We were both satisfied and dissatisfied with the results. Satisfied because the students worked from and with a whole body of information; dissatisfied because it appeared that, although we might have a different approach to teaching and testing, we were still asking the students too many questions that made them focus only on individual paragraphs rather than understanding the inter-relatedness of the whole selection. Furthermore we found that many of the students' responses were copied verbatim from the text. The lack of some basic editing skills in appropriate circumstances left some doubt as to how much comprehending was actually taking place.

Our grouping continued. Gradually we developed a test for which the students again would have a textbook selection in hand (Robertson, 1981). During a designated time, they would make notes on the material. At the end of the time period, the text would be surrendered, and they would be required to answer questions using their notes as a reference. After the allotted time for reading and notemaking elapsed, a number of literal (43) points) and inferential (45 points) questions were posed. The remaining 12 points were assigned to a summary of the selection. The purpose of the test was not only to ascertain the manner in which students took notes but also to observe how well they were able to use their information to answer various types of questions.

Findings

A survey of 93 randomly selected test papers from one semester

revealed that students did recognize and use the overall major organizational patterns of the author in their notemaking topics and sub-topics. However, within the context of the notemaking process, it was found that students did not sustain a logical system of subordination between main ideas and details and could not carry through and complete the organizational pattern. Consequently, students overlooked many of the related points germane to the overall meaning of the text. Further analysis indicated that students had a tendency to overwrite their notes. This was especially true of the poorer and low scoring students. Along with this tendency, poorer students also wrote word for word instead of summarizing or sythesizing the information into their own words. These students invariably ran out of time and failed to complete the notemaking part of the exam. With regard to their ability to use the information to answer various types of questions, it was observed that students were successful when the stem of the question was the same as or similar to the wording of the text.

Text: The main types of crime can be conveniently classified into four principle categories . . .
Question: List the four major categories of crime.
Results: 84% full credit
7% partial credit
8% no credit

They achieved the same or similar sucess when recognizing the importance of definitions of terms.

Text: A crime is an act that has been formally prohibited by a political authority usually by an enactment of law.
Question: Write the definition of crime as given in the selection.
Results: 78% full credit
6.5% partial credit
14% no credit

On the other hand, students were not as successful when stem words in questions were not as obvious and when the details had to be found throughout the longer passage.

Text: Although many forms of deviance are defined as crimes, not all crimes are regarded as forms of deviance. Some crimes . . . are committed so frequently and ignored by social control agencies so often . . .
Question: According to the selection give two examples of crimes that are generally ignored.
Results: 35% full credit
46% partial credit
16% no credit

Another area giving students difficulty on the literal level was in con-

trasting two terms not juxtaposed in the reading selection. This required them to bring two parts of their notes together to make a statement.

Question: Contrast crimes against property with crimes without victims and give an example of each.

Results: 41% full credit
49% partial credit
9% no credit

In addition, the students were even less successful when they were required to answer inferential questions based on their notes. Either they showed an inability to recognize a principle when several examples were given, or they were not able to combine and recombine their notes to answer different types of questions, particularly when the text information did not respond directly to the question, yet the idea was a major concept stated by the author.

Question: Why does the government pursue crimes that have no victims?

Results: 30% full credit
8% partial credit
58% no credit

It is interesting to note that when students were given vignettes of types of crimes not mentioned in the article they were able to achieve an overall 83% success rate, when previously they were unable to understand the same principles discussed in the customary contextual manner. Could it be that students' experiential knowledge served them in answering this type of question?

Conclusion

If developmental reading courses are to assist students in preparing for the demands of their content courses, then the materials, the instruction, and the evaluation procedures should mirror these demands.

One way of accomplishing this is by using holistic materials which will train students to see how various ideas are integrated in selections and chapters of textbooks. Not only will students have to heed the structural framework of the author's main ideas (in a textbook), but they will also have to be able to note the relation of the parts (individual chapters) to the whole which forms the cohesive unit.

Moreover, this training in the analysis and synthesis of information will help students to make more comprehensible and functional notes. Our findings revealed that the students have a minimal understanding of notemaking. They are able to recognize major topics and sub-topics, but beyond this stage they are in need of additional

instruction.

Following from their limited ability to make notes is their inability to use their notes to answer questions. Evidence shows that students can answer literal type questions which use phraseology similar to the text in the stem of the test question, but, when asked to recombine their notes to answer more complex literal or inferential questions, they find it increasingly more difficult.

Finally, if holistic materials and the teaching of notemaking are means of bridging the gap between the activities of the developmental reading classroom and the realities of the content area classroom, then they should be reflected in the end-of-term examination. The assessment experience and the feedback are vehicles by which students can better understand their strengths and weaknesses in these areas. Also, if the instruction and the assessment experiences include both literal and inferential questions of varying degrees of difficulty, the students will more readily realize that notemaking is more a tool than simply a storehouse of data. It is hoped then that they will become more cognitively aggressive when doing their textbook readings.

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LISTENING INSTRUCTION: AWARENESS, IDENTIFICATION AND PRACTICE

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Assumptions are made by instructors that students are capable of listening and comprehending the vast amounts of information that are thrust upon them. However, the reality is that most listeners listen with only twenty-five percent efficiency (Steil, Barker, & Watson, 1983). Moreover, according to Rankin's (1929) hallmark study of communication, of the seventy percent of each day adults spend in communication, forty-five percent is spent listening. College students spend even more time listening, yet very little, if any, of students' coursework is geared toward training them to be efficient listeners. (Barker, Edwards, Gaines, Gladney, & Holley, 1980). Skillful listening will not only enable them to be more successful in their academic pursuit, but also in their everyday lives and in their careers.

Are we as educators properly addressing this vital area of communication? The answer is "no." Courses abound on college campuses in reading, writing, and speech; somehow, as educators, we have narrowed our vision and have not properly addressed the skill of listening. What can we do to help our students succeed? The following is a brief summary of a course designed to teach community college students how to effectively listen.

The three major categories of instruction in the course are: (a) functional listening; (b) awareness of auditory disabilities; and (c) interpersonal listening.

In functional listening, students learn to listen for the main idea, to identify supporting points, to summarize accurately, to avoid distractions, to listen actively, to analyze group discussions, and to identify situations with more than one main idea.

In awareness of auditory disabilities, students are made acquainted with the basic concept of auditory disabilities and functional awareness of disabilities in self and others.

Students identify and practice interpersonal listening techniques, such as identifying the speaker's message, responding to speaker's messages, and identifying speaker's underlying message.

Students develop these skills throughout the course by applying the AIP technique developed by this author/instructor. AIP stands for awareness, identification, and practice. Students use these

concepts to systematically develop their listening potentials.

Awareness

Since listening begins so soon after birth, it is easy to assume that people do not need to be taught how to listen. However, listening is not an inherent skill. Perhaps because it appears so easy to listen, we have traditionally failed to teach listening. In schools where listening is taught, listening comprehension has as much as doubled in a few months (Steil, Barker & Watson, 1983). A beginning step in listening instruction is to raise a student's awareness level of the listening process. To accomplish this, students are asked to keep Journal #1 in which they focus on listening for ten minutes each day for six consecutive days and identify the 5 w's of the listening situation -- (who, what, where, when, why). Students select a different time and situation each day. They soon learn how difficult it is to listen for ten minutes, how much stimulus and information is processed, and how much information is routinely filtered out. Classroom instruction at this point centers on developing a personal definition of listening. In Journal #2 students identify one time each day when they found themselves not listening. Was the cause of interrupted listening boredom, fatigue, distractions (internal or external), or difficult material, etc.? At this point students have begun to be aware of their individual listening habits.

Identification

After awareness of listening is heightened, students identify their strengths and weaknesses; to do this they are required to keep a third journal. This journal has five specific steps.

Step 1 — Students list five listening weaknesses. These weaknesses are based on knowledge gained from previous journals, from the Watson Barker Listening Inventory (which is administered on the first day of class), and from class participation.

Step 2 — Students list those situations in which poor listening occurs. Where did they, as listeners, find themselves not listening? Was it in class, in conversation with a friend, on the job, etc?

Step 3 — Students examine their attitudes toward each situation and their listening habits. How did they feel when they did not listen well? Have they chosen to change poor listening habits?

Step 4 — Students select two of the five situations in which they have difficulty. They choose two poor listening habits that occur in these situations. Next, they identify two techniques that will help them change each habit. A format for this is as follows:

Situation #1 _____

Bad Habit: _____
Techniques for Improvement:

1. _____

2. _____

Step 5 — Students must practice twice using each of the techniques they have developed. They briefly describe whether the techniques worked. If they did, why did they work? If they did not, why not?

Practice

Practice is the third step in the AIP approach to listening instruction. At this point, students realize that the responsibiltiy for improvement rests with them and not with the instructor. The instructor is merely a facilitator whose function is to promote self-improvement. To improve, one must practice. This is accomplished by use of a fourth journal and a listening lab. The journal requires students to select either a television or radio show of ten minutes or more duration and listen and analyze the program. Specifically they are listening for main idea(s), supporting points, purpose, organizational patterns, and emotional words. The listening lab activities are quite varied and are taken from cassette programs carefully selected for this purpose. These activities are to be accomplished outside the classroom. Because students now know their weaknesses, they are encouraged to select lab activities that will enhance their individual listening skills.

Conclusion

Effective listening skills are vital for the success of college students, yet we have traditionally ignored them when establishing developmental courses. For those not yet teaching courses in listening, now is the time to offer students an opportunity to improve in this, the most basic of all communication skills. For those already offering listening courses, now is the time to share curriculum ideas. The AIP approach to listening instruction is just one method. There are many more being implemented and many more waiting to be developed.

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AN ADDED RESPONSIBILITY: TEACHING PROSPECTIVE AND ACTIVE K-12 TEACHERS HOW TO TEACH STUDY SKILLS

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In the early 1980's, much attention was focused on the quality of all levels of education in the United States. A report published by the National Commission on Excellence in Education (1983) questioned the competence of teachers and suggested that some teacher preparation programs are ineffective. This national attention precipitated the formation of state and local committees to study the quality of education in their specific provinces. Universities and colleges also began to evaluate their teacher preparation curricula and requirements. However, little attention has been given to the instruction that prospective K-12 teachers are receiving in the teaching of study skills. Considering the lack of study skills preparation that entering college students have displayed for over 150 years, perhaps the teaching of these skills in K-12 classrooms should be given high prioity.

There is an urgent need for students to learn study techniques before they enter colleges and universitites. In the *Houghton Mifflin Study Skill Handbook*, Shepherd (1982) admits writing his text to explain all the things that he wishes somebody had explained to him before he entered college. Many other professionals in the field of developmental studies are disappointed that they weren't taught study techniques long before their undergraduate experiences, and educators are beginning to believe that these skills should be stressed in our elementary and secondary schools (Gaus, 1982; Dean, 1977; Reid, 1975; Shepherd, 1970).

Study skills instruction has been notably absent from the grade level and content area classrooms that are its natural home (Gaus, 1982). The assumption seems to be that students just naturally learn effective study techniques on their own as they progress through their schooling. However, Dean (1977) states that study skills are a complex of skills and are unlikely to be learned informally. She believes

they need to be taught skillfully and purposefully. The teaching of these skills present a challenge to children and teacher alike.

Simple study skills need to be introduced in the lower elementary grades and reinforced at each successive grade level. However, the basic study skills learned in the primary grades do not equip students with sufficient skills to learn everything they need to learn through school. All teachers, regardless of the grade level or subject they teach, should know what the fundamental study skills are and how to teach them to children who need help with increasingly more difficult and varied subject matter (Smith, 1974). Additional and more complex skills can be added as the student enters junior high. At this level the objective of teaching study skills is to enable young people to study efficiently and independently in a variety of learning activities (Reid, 1975).

Secondary school students must gain increasing independence in study skills in order to meet the requirements of current subject demands. Most students at this level do not know how to apply study skills effectively. These skills are not taught, and the students generally do not acquire competency by instinct (Shepherd, 1970). Secondary school teachers need to systematically incorporate study techniques into their subject matter curriculums. Learners need instruction in order to develop such study skills as listening, following directions, notetaking, improving memory, scheduling study time and location, and retaining concept knowledge (Swiderski and Zettel, 1982).

Research on study techniques indicates that any study technique can help if it enables students to process the right information in the right way, but students often have to be carefully trained to use any technique to advantage (Armbruster and Anderson, 1981). Students themselves acknowledge a need for more information on how to be better learners. When a group of students described to Hornberger and Whitford (1983) how teachers could help them improve their learning, teaching study skills was the most often mentioned suggestion.

Unfortunately, teachers have received little instruction in how to teach study techniques at the elementary and secondary levels. Graduate students in the School of Education at Stanford take the course "Observation and Practice of Reading and Study Skills" (Walker, 1980), but classes such as this one should be incorporated into undergraduate teacher training programs.

We are handicapping our teachers by not giving them the training they need in the teaching of study skills. If we expect our teachers to be able to teach their students to learn how to learn, we must first teach the teachers. If there is to be an improvement in teacher preparation programs, it would be most helpful to future elementary and

secondary students if the changes would include undergraduate emphasis on the teaching of study skills.

In addition to undergraduate education majors, certified teachers also need information on how and when to teach study skills in their K-12 classrooms. Carpenter (1985) interviewed fifty K-12 teachers and found that over two-thirds of them were not teaching study skills in their classrooms. They felt inadequately prepared to teach study skills and believed a class to learn how to teach study skills at appropriate grade levels should be an undergraduate requirement. This situation represents an opportunity for developmental educators, who have experience and expertise in the teaching of study skills, to share their knowledge with undergraduate education majors and certified teachers.

In training teachers to incorporate study skills techniques into their curriculums, emphasis should be placed on textbook reading skills, listening skills, and notetaking skills. Teachers need information in these areas on what to introduce and reinforce at each grade level. A system-wide approach assures that students will experience coherent and progressive instruction in study skills just as they currently do in math skills.

Textbook Reading Skills

Textbook reading skills can be initiated with early reading instruction. Rather than just telling students to read certain pages, the teacher can survey the pages with the children while explaining that informational reading requires a survey before beginning. This practice can be continued and expanded throughout the lower elementary grades. Teachers can use the survey to introduce new words and new concepts, or to fill in background information. Upper-level elementary teachers can formulate reading questions from content area textbooks by changing topic headings in the texts into questions. Explaining how she formulated the questions will naturally lead into having students formulate their own questions while reading their textbooks. A study strategy, such as SQ3R, should be identified and explained to the students, and they should understand they have been doing portions of the strategy throughout their elementary schooling.

In content area classrooms, junior high students could be required to hand in questions formulated from subtopics, along with the answers they found, while reading textbook chapter assignments. Prior to returning the papers to the students, the teacher can utilize these questions when making quizzes and tests. By studying from their questions and answers, either individually or in small groups,

pupils will do better on tests and, as a result, realize the value of learning in this manner.

High school students need reinforcement in textbook study techniques in their content area classrooms because each subject carries its own vocabulary, and there are unique differences in skills used in various subject fields. An evaluation of pupil achievement and growth in the use of study skills should be made at regular intervals in content area classrooms, and teachers should constantly encourage students to increase independence in the use of study skills. For example, a chemistry teacher could include instruction about various memory techniques and require students to use one or more of the techniques while memorizing symbols.

Listening Skills

Listening skills are introduced in the lower elementary grades, but are virtually abandoned during later schooling. Upper elementary teachers could make their students aware of the use of body language and voice loudness and pitch in identifying the speaker's main points. Junior high and high school teachers could ask students to reiterate main points after each section of a lecture, ascertaining that students are learning to identify important information from verbal presentations. They might also ask students to explain how they knew each item was a main point, making students aware of how they and others distinguish between main points and details.

Underlining Skills

Underlining techniques should also be introduced in the elementary grades. Students could be given preunderlined material whenever possible and trained in effective underlining using weekly readers, handouts, and other disposable materials. Practice in separating the main idea and underlining it, along with feedback about their performance, will strengthen their abilities.

Underlining skills should be reinforced and assessed as pupils move through their K-12 schooling. Junior high and high school students could be given supplemental readings and required to underline main ideas, put brackets around important details, and number sequences. Students should be reminded that they will purchase their own books in community colleges or colleges, and will then use these skills extensively.

Notetaking Skills

To improve student notetaking skills, elementary teachers could first give them handouts with both full notes and space for student notes. In junior high, the instructor could give students a handout with full notes only after the lecture, and the students could use the handout to compare their notes to the ones on the handout. Students could also be given study time in small groups to compare their notes and identify main points.

Junior high and high school teachers should provide instruction in good notetaking techniques, encouraging students to leave space on each page for identification of main points or questions which will be useful during review. The instructors should insert questions or verbal and nonverbal cues into lectures to highlight structure, and then they should call the students' attention to the techniques used so that students will recognize the techniques without prompting in future lectures. Students could be asked to underline or highlight the main points on their notes, and teachers could then collect these notes and evaluate the students' notetaking abilities. A short study time, followed by a brief quiz over main points, at the end of each lecture would encourage students to use good notetaking techniques and sharpen their notetaking skills.

Conclusion

Developmental educators need to offer their expertise to assist in the training of future K-12 teachers and to add to the abilities of certified K-12 teachers in the teaching of study skills. Classroom presentations, workshops, institutes, in-service presentations, and summer classes can be used to educate and demonstrate.

Tucker (1982) believes that programs that emphasize teaching people how to learn are more cost-effective than programs that teach only one subject matter or another. These programs help students learn more efficiently and more comprehensively than is ordinarily possible through unguided study. Empirical studies of learning curves suggest that factual or subject matter knowledge depreciates rather rapidly. In sharp contrast, the return on learning how to learn continues to yield dividends of increased personal competence throughout the learner's productive lifetime.

Learning how to learn must be built into curriculums as low as the elementary level and reinforced through the junior and senior high levels. Teachers must be trained to teach and expand on these skills at appropriate grade levels, and developmental educators should offer their services to assist in the training of these teachers.

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TEACHING READING THROUGH CONTENT AREAS: PRESERVICE TEACHERS' ATTITUDINAL CHANGES

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Reading as a medium for acquiring information at the secondary level continues to be an obstacle for many students (Cheek & Cheek, 1983; Herber, 1978). Prospective teachers, therefore, need to learn how to integrate the teaching of reading skills within their respective content areas. In order to facilitate this integration, colleges and universities offer classes in teaching reading through content areas (Blomemberg, 1981) and certifying boards throughout the country are requiring such classes (Bader, 1975).

Although preservice teachers are shown how to integrate reading and their content areas, this does not insure implementation (Vaughn, 1977). The attitude of preservice teachers toward reading may be as important as the acquired knowledge. The major purpose of this study was to determine if a first course in teaching reading in content areas produces attitudes conducive to the teaching of reading in those areas. The specific questions asked were:

1. Is a first course in secondary reading instrumental in producing positive change in attitude toward the teaching of reading in content areas?
2. Is there a significant difference in the change of attitude toward the teaching of reading in content areas and the lowest and highest quartiles in level of dogmatism?
3. Is there a significant difference in the change of attitude toward the teaching of reading in content areas and cognitive flexibility between the lowest and highest quartile?
4. Is there a significant relationship between change in attitude toward teaching reading in content areas and age, sex, or major?

Method

A seventy-seven item survey was administered to all students enrolled in seven sections of a required reading course for secondary

preservice teachers. The survey was administered the first and last day of class. Personal student codes rather than names were used to provide anonymity. In addition, students were asked to supply information on age, sex, and major.

Although 157 students were enrolled in the seven sections, only data from 115 subjects were included in the final statistical analysis. The differential loss of subjects was forty-two with the majority eliminated due to incomplete data (twenty-seven) and with the remainder (fifteen) not enrolled in secondary education, i.e., elementary education, special education, and media. All sections were taught by this researcher.

Definitions

The following definitions of terms are provided to aid the reader:

Attitude: The tendency to react specifically toward a situation (Good, 1973).

Dogmatism: "A basic characteristic that efines the extent to which a person's system is open or closed; namely, the extent to which a person can receive, evaluate, and act on relevant information received from the outside on its own merits unencumbered by irrelevant factors in the situation arising from within the person or from outside" (Rokeach, 1967, p. 57).

Flexibility: The ability to change behavior in accord with changed needs and situations. Specifically, the ability to adapt one's thinking and social behavior (Gough, 1956).

The instruments used in this study included: *A Scale to Measure Attitudes Toward Teaching Reading in Content Areas* (Vaughn, 1977); *The Rokeach Dogmatism Scale,* Form E (RDS) (Rokeach, 1969); *The Gough-Sanford Rigidity Scale* (5) (FXS) (Gough, 1975).

These three instruments served as the criterion measures for attitudes toward teaching reading in content areas, dogmatism, flexibility respectively. Each of these tests uses a seven-point Likert Scale. The responses range from strongly disagree (one point) to strongly agree (seven). The range of points of each of the tests is: VAS: 15-105 points; RDS: 40-280 points; FXS: 15-105 points.

The primary purpose of this study was to determine if a first course in secondary reading produced positive change in attitudes toward the teaching of reading in content areas. The difference between pre-

and post-test data were compared and evaluated with a one-tailed t test to determine if a significant (alpha = 0.01) change had occurred. Table 1 displays the results of this analysis and indicates that a significant change in attitude did take place as a result of the course.

Table 1
A One Tailed t Test on the Change of Attitude Toward the Teaching of Reading in Content Areas

Variable	N	S.D.	Mean	t
Pre-test	114	9.1793	78.6842	
Post-test	114	9.4169	84.3772	
Difference	114	10.1294	5.6929	6.008*

*Significant beyond the 0.01 level.

A *t* test for independent means was used to determine if there was a difference in students' attitude toward the teaching of reading in content areas between the lowest and highest quartiles in level of dogmatism. Examination of Table 2 reveals a significant (less than 0.01) difference in change of attitude between the lowest and highest quartiles in level of dogmatism on both pre- and post-tests.

Table 2
A Comparison of the Highest and Lowest Quartiles on the Rokeach Dogmatism Scale (RDS) and Their Respective Change in Attitude Toward the Teaching of Reading in Content Areas

Group	N	Mean	S.D.	t
Pre-test				
Lowest Quartile	37	81.7297	8.9772	
				2.6416*
Highest Quartile	29	75.8621	8.6136	
Post-test				
Lowest Quartile	37	88.5946	8.6617	
				2.6863*
Highest Quartile	29	88.6552	8.9253	
Difference				
Lowest Quartile	37	6.8648	10.1219	
				2.8527
Highest Quartile	29	6.7931	9.8139	

*Significant beyond the 0.01 level.

The reader should note that an inverse relationship exists between attitude toward reading in content areas and level of dogmatism, e.g., the higher the scores on the attitude scale, the lower the dogmatism level. Table 2 further reveals no significant difference in *change* of attitude, i.e., the changes were 6.8648 and 6.7931 for the lowest and highest quartile, respectively.

A *t* test was also used in comparing the change in attitude toward the teaching of reading in content areas and the lowest and highest quartiles in cognitive flexibility. Inspection of Tabel 3 shows no differences in change of attitude.

Table 3
A Comparison of the Highest and Lowest Quartiles on the Flexibility Scale (FXS) and Their Respective Change in Attitude Toward the Teaching of Reading in Content Areas

Group	N	Mean	S.D.	t
Pre-Test:				
Lowest Quartile	33	80.4242	10.0903	
				.4785
Highest Quartile	31	81.5485	8.2455	
Post-Test:				
Lowest Quartile	33	84.9091	11.7696	
				.0084
Highest Quartile	31	85.1290	8.2455	
Difference:				
Lowest Quartile	33	4.4848	12.1787	
				.3346
Highest Quartile	31	3.5806	8.6901	

The relationship between change in attitude toward the teaching of reading in content areas and age, sex, and major was investigated. The comparison of this change in attitude and the student characteristics of age and sex is displayed on Table 4. Examination of Table 4 reveals that younger students (24 or younger) and older students (25 or older) were not significantly different on preliminary evaluation; however, the groups were significantly (less than 0.05) different on post-testing. They were also significantly (less than 0.05) different in their degree of attitudinal change. In addition, Table 4

Table 4
One Tailed t Test on the Change of Attitude Toward the Teaching of Reading in Content Areas and Student Characteristics of Age and Sex

Variable	N	Pre-Test	S.D.	t	Post-Test	S.D.	t	Difference	S.D.	t
Age:										
24 years or younger	59	78.8305	8.5261	.1735	82.7966	8.2687	1.8600*	3.9661	8.3272	1.8901*
25 years or older	55	78.5273	9.904		86.0727	10.3187		7.5454	11.5531	
Sex:										
male	63	77.5556	9.5996	1.4870	82.4127	10.1642	2.5325**	4.8571	11.5823	.9682
female	50	80.1600	8.5865		86.8800	7.8989		6.7200	8.0357	

* Significant beyond the 0.05 level
** Significant beyond the 0.01 level

shows that males and females did not differ significantly on pre-testing, but were significantly different on post-testing. Furthermore, there were no significant differences between males and females in the amount of attitudinal change.

Finally, the relationship between change in attitude toward the teaching of reading in content areas and students' majors was examined. Table 5 provides descriptive data on this relationship.

Table 5
Descriptive Data on Attitudes Toward Teaching Reading in Content Areas by Major

Major	N	Pre-test Mean	S.D.	Post-test Mean	S.D.	Change	S.D.
Art	13	79.6923	8.8636	82.0769	10.5393	2.3846	8.5687
Foreign Lang.	9	82.5556	6.8394	92.1111	5.6223	9.5555	5.5477
Language Arts	17	83.7647	7.8940	89.8824	6.9900	6.1175	9.8861
Mathematics	9	77.6667	7.2284	91.4444	5.4108	13.7778	10.3172
Music	8	75.6250	8.2869	86.6250	6.6748	11.0000	12.4786
PE	29	74.5172	9.1909	77.4138	7.8899	2.8965	11.5769
Science	10	82.0000	9.6286	88.2000	5.7115	5.6000	7.0427
Social Science	19	77.6842	9.8941	81.6842	9.9110	4.0000	8.7812
Total	114	78.6842	9.1799	84.3772	9.4169	5.6929	10.1294

Discussion

This experimental study has provided data on the impact of a course in the teaching of reading in content areas on preservice teachers. The data presented indicates that such a course does make a significant difference in changing the attitudes of preservice teachers. Furthermore, the less dogmatic students scored significantly higher on the attitude scale on both the pre- and post-tests than did the more dogmatic students. In contrast, there does not appear to be a difference in change of attitude between the lowest and highest quartiles in cognitive flexibility. In terms of students' characteristics, age seems to make a difference. The older students (25 or older) appear to be more amenable to attitudinal change than their younger (24 or younger) counterparts. There were also male-female differences. Females were affected by the class to a greater degree than males, though statistically, they were similar on pre-testing. Finally, the attitudinal change toward the teaching of reading in content areas and major was considered. Vaughn (1977), the author of the "Scale to Measure Attitudes Toward Teaching Reading in Content Classrooms," has developed criteria for interpreting the scores on the scale (See Table 6).

Table 6
Interpretation Table for a Scale to Measure Attitudes Toward Teaching Reading in Content Classrooms

Range	Attitude
91 or higher	High
81-90	Above Average
71-80	Average
61-70	Below Average
60 or lower	Low

NOTE: From "A Scale of Measure Attitudes Toward Teaching Reading" by J.L. Vaughn, 1977, *Journal of Reading, 20,* p. 608

It is interesting to note that this sample of students entered the class with what Vaughn would consider average scores (71-80). Three majors (Language Arts, Science, and Foreign Language) had above average scores (81-90 range). This suggests that students are already changing their attitudes prior to taking the class. This should not be surprising since all of the education majors enrolled are upper division students. In addition, the entire group, with the exception of PE, scored in the above average range on the post-test. Two majors (Mathematics and Foreign Language) scored in the high range (91 or higher).

Conclusion

This study supports the hypothesis that a course in teaching reading in content areas is valuable in creating positive attitudinal changes. The less dogmatic students reveal a more significant difference in attitude than do those who are more dogmatic; cognitive flexibility does not appear to be a significant factor in attitudinal change; older students and females seem more receptive to this change; and attitudinal change seems to be related to the major a student selects.

A final word of caution for those who read this manuscript. Although this research has shown that attitudes can be changed in a positive direction, this does not necessarily mean that behavioral change has occurred. A follow-up study to determine if these students translated their positive attitudes into practice would be useful. To borrow an old adage, "To know and not to do, is not to know."

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COMMUNICATIVE COMPETENCE: THE STUDENT IN CULTURE SHOCK

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March 15 was the final date by which students at Mount Royal College could drop a winter semester course with a grade of W (Withdrawn) rather than F (Failed). As an academic advisor for Arts and Science students, I was deluged with requests for signatures on "drop forms." While I expected that students who had not made sufficient effort throughout the term would be dropping courses, I had not anticipated the number of "good" students—committed, determined students—who would feel compelled to drop rather than fail courses. As I listened to refrains of "I guess I just did't know what to expect," I perceived a direct application of research I was conducting on academic "world views" for different academic disciplines.

I am ready to suggest a new category for the list of reasons for dropping courses on the "drop form": "I went into culture shock." Such a category would serve as a translation for "I did't know what to expect." Students in "culture shock" make similar assumptions to those international students make about language requirements; that is, they assume that a familiarity with grammar and vocabulary will equip them to be adequate academic communicators in environments other than the classroom. They function elsewhere, but they do not know what to expect in academic settings nor how to respond competently within a new academic environment. Indeed, it would seem they cannot apply their communicative competence to the varied environments of the academic community.

The Problem

Mastery of the English (or indeed any) language consists of more than knowledge of the words in the dictionary and all the rules in a grammar text. Language is not a product; it is a process of communication. Applied linguists have identified communicative competence as a crucial component in second language study and, in applying their findings, have contextualized language according to

its uses and functions. They recognize that, as Currie indicates, "It is not the grammaticality of a stretch of language which decides its acceptibility, but its socio-linguistic context" (1975, p. 365). Language does not exist in a vacuum. Since it is a process, it has "functions" which serve purposes (Halliday, 1973). The uses of language and the purposes it serves have been described as "doing things with words" (Austin, 1962), speech events (Hymes, 1968), and speech acts (Searle, 1969)—all of which involve sociolinguistic and psycholinguistic applications of language analysis. If words and language "do things," are "events" or "acts," then language must be interactive—it must be produced, processed, and acted upon.

In order to use language as a vehicle in the communication process, the speaker or writer must situationalize the language; he or she must apply it to the parcticular "world" in which it is an event. Bitzer (1969) defines a "rhetorical situation" as one in which a perceived need to use language to communicate invites a "fitting response." He expands: "If it makes sense to say that a situation invites a 'fitting' response, the situation must somehow prescribe the response which fits" (p. 10).

Bitzer's concept of a situation's eliciting "fitting" discourse applies to the academic classroom. What responses "fit" in this environment? If a student can answer this question and use language accordingly, then he or she is a competent academic communicator. However, students seldom ask and more seldom answer this question because they are in "culture shock" and assume that the uses to which they put language in other environments will serve them in the classroom.

In fact, the issues of competence and "fitting" discourse relate directly to the "world view" of the participants in discourse. Different academic disciplines and different environments for communication assume different ways of looking at the world. Most students will agree that their philosophy instructor thinks differently, talks differently, and tests differently from their physics instructor. However, the subsequent question: "Differently in what respects?" generally elicits a description of personalities, not disciplines. However, the crux of the problem for students who cannot make a communicative switch from philosophy to physics derives not from personalities but from world views. Such a problem was articulated almost a half century ago by Kenneth Burke (1935/1965): "People may be unfitted by being fit in an unfit fitness" (p. 10). Bitzer's "fitting response" for one discipline will not necessarily "fit" in another. The problem-solving patterns in one view of the world do not "fit" in another.

The problem multiplies because the students, particularly those

in their first semester, are not faced with merely a single environment in which they can go into "culture shock." For some, the shock is multiplied by the number of courses they take; they may be in "culture shock x 5" if they are studying literature, math, science, business, and social science. In such situations,students frequently withdraw if they cannot get help in identifying and developing the competencies demanded by the various academic disciplines.

Skinner (1953) discusses patterns for problem solving and concludes, "The difficulty of a problem is the availability of the response which constitutes the solution. . . . A solution is a response which exists in some strength in the repertoire of the individual, if the problem is soluble by him [or her]" (pp. 251-256). Patterns of responses differ. Freedman (1984) speaks of such patterns when she writes, "Different disciplines imply different heuristic procedures for arriving at insights; they involve different organizational patterns and rhetorical strategies" (p.85). In Bitzer's terms, they have different "fitting responses," and, in Skinner's terms, these responses must be in the repertoire of the problem solver if the student is to be competent in an academic field. Tritely put, the college student must wear many hats, but, unfortunately, he or she has only one head. The Learning Skills staff has the task of helping the student make all the hats fit.

The Solution

If specific academic "hats" fit in specific world views, then the first task of the student is to perceive the world views of academic disciplines. I have divided these disciplines broadly into Arts, Social Science, and Science, and I have examined and attempted to describe the "rhetoric," the "heuristics," the "hat," the "fit fitness" appropriate to each of these areas to students who have participated in learning skills workshops. For each broad area, educators developed, in Pylyshyn's (1973) terms, "a descriptive symbol structure containing perceptual concepts and relations" (p.7). These perceptions of world views are perhaps overly generalized, but they have served as a basis for discussion as a spring board so to speak, for students' becoming alerted to the different world views of academia.

Arts

Students whose "hats don't fit" in arts classes bewail the apparent lack of organization in lectures and assignments in such areas

as philosophy, film studies, art appreciation, and literature. They claim they cannot take adequate lecture notes because they cannot identify degrees of importance of comments, examples, themes, images, and discussions. They say, "He/she just goes on and on. I take down what I can, but my notes don't make any sense. I don't know what to study for the exam, and I can't write my papers." What they do not realize is that the very "going on and on" that they identify as a problem is the heart of the world view, or pattern in analyzing materials, in arts courses.

In literature, for instance, a central theme must be explicated by use of many examples, and the theme may not become apparent apparent until all the examples have been considered. In a literature lecture, for example, "flower imagery" may be crucial and may develop into a symbol for the "flowering" of a character; "color imagery" may be crucial to plot development. As a lecturer expands on these images, he or she is building up to the theme of the lecture. The method is similar to that of becoming acquainted with a work of literature. The reader is exposed to images and can draw a conclusion about their significance only after all have been assimilated and analyzed.

Students who are comfortable in math and science, in which a hypothesis is stated early, then explored, are often frustrated in an arts class. They become impatient, for example, when they must look first at what the river means to Huck Finn at various points in a novel and only at the end perceive the river as a symbol for Huck's development.

Students need to approach "the world of the arts" inductively. They need to look at "the world of arts" as a collection of random perceptions, unified by a central theme. That theme is often not apparent until the seemingly random examples are discovered to have a common denominator. Only when students relax and trust that a theme will emerge eventually can they understand and apply the heuristics of arts courses. Only then can they view a film, painting, or sculpture; hear a musical masterpiece; or read a play, poem, or novel and respond competently.

Social Science

The examples and details in social science courses (like psychology, business management, history, geography, political science, sociology, economics) form a different pattern from that of the arts. In social science, a central core of an idea or ideas causes a "ripple effect" in the world view of the discipline. Like someone

tossing a stone into a pond, the social scientist tosses an idea into the "world" and perceives its ramifications. Thus, a change in the money supply, for example, "ripples" into interest rates, employment structures, international trade; an assassination of an archduke may or may not "ripple" into a world war with its political, social, and economic ramifications.

Once students look for such a pattern in the study of people and events, they move from a world view they may have previously adopted, often one of memorizing dates, places, and battles in history, for example--to one of looking at implications and ramifications of a central core of an idea or ideas. If they wear a "hat" of looking for ramifications, not merely for details, they adjust to an appropriate world view for social sciences—one that may not be appropriate for arts or science. They become aware of different "fit fitnesses" and make appropriate adjustments to different world views. Perhaps they avoid culture shock.

Science

The world of the scientist is perhaps the most logical and disciplined of the three worlds under discussion. For the scientist, there is the scientific method, and for the student in a science class, this method may become a security blanket. He or she can count on hypotheses and proofs. However, the world view of the scientist encompasses more than the method. In fact, the world of the scientist is perhaps the least defined in that no one science exists independent of others. Physics is meaningless without math; chemistry and biology overlap quite frequently.

The student must view the world of science as a collection of "problem sets" consisting of clusters of related ideas. The subject area is filled with ideas and terminology which will often appear in the form of a problem or problem set. In this world, specialized meanings of words become crucial to the understanding of the material. However, all ideas and terms are tightly linked to others. The difficulty of the details to be mastered is offset by the predictability of the rhetorical pattern in which they will be presented and of the heuristic pattern in which they will be tested.

The arts student becomes frustrated in science courses because the freedoms to choose important details and to interpret findings are limited. The student who could choose not to write about vegetation images in a poetry analysis has no choice in a botany class. If the student does not recognize the world views that promote this

difference between literature and botany, he or she will not be a competent communicator.

Conclusion

The incoming college student has more adjustments to make than is commonly believe. Approaches to mastering material in earlier schooling and competency in communication in the home or workplace will not necessarily equip the new student to make the communicative adjustments required of him or her. Those who claim to be "good in math but not in English" or "comfortable with words but not with numbers" may be oversimplifying their strengths and weaknesses. Whether a student is "good in English" or not, that student can function in a literature course if he or she can adapt to the appropriate world view. This is not to say that the student will become an English major, but he or she will be able to adjust to a discipline and will be academically mature enough to "change hats" when a change of hats is required.

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WIN-WIN POTENTIAL FOR RETENTION: STUDENTS ASSISTING STUDENTS TO SUCCEED

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Demographic changes in future college populations (Boylan, 1985) and increasing awareness of the costs of attrition have provided an impetus for colleges to focus on retention as well as recruitment in the next two decades. Friedhandler (1981) estimated the cost of attrition at one college in California to be 2.5 million dollars in state funds lost in just one academic year. Fifty-two percent of that loss was due to student withdrawals from college.

Not only are the costs high, the causes of student withdrawal from college are as diverse as the students themselves. Counseling and retention literature underwrite the complexity and the variety of reasons prompting such decisions. (Astin, 1975; Beal and Lenning, 1980); Nelson, Scott and Bryan, 1984; Cope, 1978; Muscowski, 1984; Pascarella and Terrenzini, 1980; and Tinto, 1975). Many of those reasons are non-academic. They include not knowing where to get help when it is needed and not having a personal support system of people who care if the student succeeds or fails, or who can help the student cope with the academic demands, increased freedom, and new temptations of college life.

With student support groups, colleges can provide some alternatives for these and other non-academic reasons related to high attrition. A recent *Journal of Developmental Education* (1985) included a summary of the report of a panel established by the National Institute of Education for the purpose of studying undergraduate education in American Colleges. A personal support group was included in the panel's recommendations because the panel felt that support groups would help enhance students' self-esteem, academic identity, and sense of life direction.

Students Assisting Students to Succeed (S.A.S.S.) is such a support group at the University of Texas at El Paso. The genesis and major characteristics of the program are described below. S.A.S.S. targets a particular student population at U.T. El Paso, but its unique potential for retention merits consideration in retention planning

regardless of the student population targeted.

Students Assisting Students to Succeed was first started in 1982 as a loosely structured student for provisionally admitted freshmen This program is more fully described by Wood and Shaw, (1984). In order to achieve more status and visibility for the group, student organization registration was sought and obtained in 1983-84. From the outset, the focus of S.A.S.S. was and continues to be on the non-academic needs of high-risk students. This is evidenced in its constitutionally stated purpose—to serve as a trained, non-threatening, credible, and accessible personal support system for provisional students. The high-risk student population served by S.A.S.S. consists of the 800-1,000 freshmen admitted annually to the university who do not meet regular admission standards and are admitted provisionally. About two-thirds of this group are Hispanic, most of whom are first generation college students with neither friends nor family who are truly empathetic with their problems or capable of helping them make the transition to college. As peer models and friends during the transitional semester, S.A.S.S. members attempt to fill this gap for these historically passive freshmen. They serve as a temporary support network while encourageing the provisional students to develop academic and life-management skills, to learn about and get involved in campus life, and, in short, to become knowledgeable enough and assertive enough to take charge of their own college educations. Perhaps most importantly, S.A.S.S. members provide a safety net of care that first semester when provisional students need help or reassurance.

As a student organization, S.A.S.S. is administered and coordinated by its elected officers and the Assistant Director of Study Skills and Tutorial Services, which is the central learning assistance center at the university. Forty to eighty student volunteers are recruited each semester from former provisional students from all the colleges on campus, and from students who have completed the Freshman Leadership Program. The reasons most often given for joining S.A.S.S. are wanting to help, wanting to make new friends, and wanting to gain experience in working with people. There are no membership fees, but a serious time commitment (a minimum of 20 hours per semester) to training and service is required of members. They must also have completed one semester at the university and be in good academic standing. A genuine concern is a required common feature for all S.A.S.S. members.

During their first semester, new members are expected to complete an eight to ten-hour training program which emphasizes good interpersonal skills, knowledge of the university, and the role of the

volunteers. Since the volunteers' services are implemented primarily in the non-credit eight-week study skills classes and the six labs required of provisional students, training is also included to help prepare both the volunteers and study skills instructors for the presence and participation of volunteers in those classes. For example, instructors are helped to see how the volunteers can assist them by leading small group activities, highlighting campus services and activities for the entire class, following up on student queries, checking on absentees, escorting students to campus services, conducting library tours, and completing clerical tasks and other functions within and outside of the classroom. Volunteers are likewise instructed how they can best prepare for such activities assigned to them by the instructors. Following their initial semester, volunteers are encouraged to continue their own development by participating in at least one additional training option each semester of their tenure as volunteers.

Both training and student contact begin with special orientation, advising, and registration activities for the provisional students. Some of the volunteers participate in the training for these start-up activities and make the first contact as orientation group leaders for the students. Once classes begin, contact is sustained in the study skills classes and labs mentioned above. One or more volunteers are assigned to each class so that the volunteer-student ratio averages about one to ten in these classes. Individual instructors determine the extent of the volunteers' participation in class, but their role tends to be substantial once training has clarified how the instructors and volunteers can cooperate to enhance instruction. As a minimum, S.A.S.S. members attend a study skills class meeting each week, during which they are granted time to make their services available to the students. The students soon become aware that fellow students have volunteered to be there and are concerned about them. Since beginning students often feel more comfortable speaking with other students about their problems than they do speaking with a professor or administrator, they are also encouraged to contact the volunteers individually outside of class with any questions they have about the university's policies, administration procedures, academic requirements, student services, campus activities, or problems they may be having with a subject or a professor.

In addition to their participation in the start-up activities, their personal service to students, and their assistance in the classes and labs, S.A.S.S. members contribute to various other programs at the university. Examples of this extended service include manning information booths or helping with mailings related to recruitment, participating in various public relations programs, and conducting tours

for people from the campus and the community.

Such services and student organizational status have brought S.A.S.S. campus-wide recognition and support. S.A.S.S. is one of only a few student organizations on campus to be given an office in the Student Union Building. Members logged over 300 office hours in the 1984-85 academic year and saw more than thirty students personally in their office. As a student organization, S.A.S.S. now has access to Student Association funds for help with special projects, such as sending its president to a national convention to describe S.A.S.S. at one of the conference institutes.

The volunteer student program functions on a commuter campus where more than half the students work. As a result, scheduling training and business meetings is a major problem. S.A.S.S. copes with this by offering multiple training options whenever possible, some of which are individualized, and many of which are coordinated with the training activities for other peer groups on campus. The monthly business meeting is conducted on two consecutive days in the same week to accommodate the two major class schedules.

The positive impact of S.A.S.S. alone is difficult to measure quantitatively, especially since it was one of five components started at the same time in the program for the high-risk students. There is, however, quantitative evidence to support the efficacy of the total program, and user satisfaction is high for S.A.S.S. itself among the students, the instructors, and administrators.

All indications are that S.A.S.S. members perform a valuable service by providing a communication network with early alerts when student problems surface. Furthermore, the volunteers' assistance expedits the matriculation of the high-risk students and contributes to their understanding of the university's expectations, thereby facilitating the early social integration of the students. Early social and academic integration are key factors in both successful academic performance and retention. (Tinto, 1975; Beal and Noel, 1980; Lenning, Sauer and Beal, 1980).

Members of S.A.S.S. make a significant contribution, but they also benefit personally by serving. They have opportunities to learn and practice leadership skills, and they have exceptional opportunities to work with faculty and administrators. Through training and experience, they gain a variety of academic and life-management skills, a positive self image, and experience that is highly prized by prospective employers. In short, in the process of helping high-risk students adjust and integrate, volunteers are accomplishing those goals for themselves. The process becomes a mutual win-win situation for both groups of students with high retention potential for the university.

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SUCCESS SESSIONS

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John E. Rouche, George Baker and Susanne D. Rouche summarize their national study on institutional responses to underprepared students by saying, ""Institutional responses to low-achieving students in terms of the development and maturity of retention programs is extremely important." Indeed, they conclude that, ""the best harbingers of the future are institutional plans regarding low achievement students" (Rouche, Baker, & Rouche, 1984, p. 61).

The importance of underprepared students is underlined by Brier (1984), who says, ""Underprepared students have been and continue to be an integral part of American higher education. Further, efforts to bridge the academic preparation gap are part of the traditional, if not formal, mission of higher education."

The purpose of this paper is to discuss one program to help these underprepared students to succeed in a college environment. Special Services for Disadvanteaged Students (SDSS) is a federally-funded three-year college retention program initiated at the El Paso Community College in the Fall of 1984. The project listed six major objectives:

1. A minimum of eighty percent of the projected 800 students annually served will be retained at the college through graduation or will transfer to a four year institution.
2. A minimum of eighty percent of project students not already reading at the twelfth grade level or above will be reading at the twelfth grade level upon exit from the program.
3. A minimum of eighty percent of project students not already proficient in basic math skills will demonstrate a minimum of twelfth grade basic math proficiency upon exit from the program.
4. A minimum of eighty percent of project students will maintain a 2.5 grade point average each semester of participation.
5. A minimum of eighty percent of project handicapped student will successfully complete the courses in which they are enrolled each semester with a minimum of a 2.5 grade point average.

6. A minimum of eighty percent of project students for assistance in English-as-a-Second-Language (ESL) will successfully complete the courses in which they are enrolled each semester and advance to the next higher level the following semester. (There are six levels of ESL plus a pre-level course for unusually low competency students).

To accomplish these objectives, the college provides a c:ire of six professional developmental education instructors and one secretary. The professionals include a project coordinator, three accredited community college developmental education instructors (DEI), one DEI with a specialization in teaching the handicapped, one DEI-ESL specialist, and a project counselor. All other resources of the Developmental Education Department and the rest of the college community are made available on a ""good luck if you can get it" option.

Before moving on to the actual operation, let's take a brief look at the setting. The El Paso Community College in El Paso, Texas, has three campuses in the city serving approximately 20,000 students from an area with a population approaching 500,000. It is the only two-year college in an area which also contains a four year institution, the university of Texas at El Paso. El Paso Community College is totally commuter-oriented, and its 62% Hispanic majority is indicative of the demographics of the community it serves. The college fosters an open-door policy admitting all those with a high school diploma, GED, or proof that their high school class has graduated. College catalogues are mailed to each resident in the county prior to regular registration, and the college engourages mail registration to such an extent that more than half of the students register by mail.

With the university drawing most of the serious-minded academic students, El Paso Community College provides an educational channel not only for those who are not ready for the four-year baccalaureate program, but for many older students returning to college, seeking to change their careers or to better themselves through some form of higher educational training. The college also offers traditional and non traditional two-year associate degree programs in a variety of fields. With more than 600 students currently learning English, EPCC has an impressive English-as-a-Second-Language (ESL) program for the largely Hispanic population.

In a 1982 campus survey, nine significant student problems were identified. These were as follows:

1. Lack of Academic Skills. A vast majority of entering freshmen came with inadequate prerequisites for successful college study (thinking skills, application, etc.).

2. Poor Attitude. Over one-fourth of entering students failed to

see learning as a life-long experience. They were unable to see long-range outcomes of their educational experience.

3. Low Aspirations. Sixty-three percent of registering students were afflicted with negative self-image, lack of self-confidence and/or poor motivation.

4. Cognitive Styles. Most students were unaware of and unable to use their own learning styles to their best advantage.

5. Limited English Speaking Ability. One out of three of all students enrolled had difficulty in reading assignments and understanding instructors in class.

6. Lack of College Survival Skills. Seventy percent did not understand how to take notes, outline, listen, take tests, use the library, use a dictionary, know how to follow directions, read maps, charts, or graphs, skim, or scan, and had no memory training or instruction in effective concentration.

7. Lack of Counseling. Many had little information about career counseling, employment skills, personal and social adjustments and interpersonal communications. Many never spoke with a counselor at all before starting classes.

8. Handicapped Students. An average of sixty new severely handicapped students were admitted each semester. Their matriculation was characterized by: a lack of educational objectives; high course repeat rate; high attrition rate; lack of academic skills; and lack of social maturity.

9. Low Income. Half of all new students came from low-income families and were eligible for financial aid; severe problems involved transportation and other school costs. Financial constraints often caused students to miss class because of employment, lack of child care, or lack of family support.

Special Services for Disadvantaged Students was mandated to deal with these problems. Federal guidelines established specific eligibility criteria for admission to the program. Groups served include: all handicapped students; low income students eligible for financial aid; first generation college students. Within these groups, priorities for student selection were based upon: application date; academic need; number of semesters completed at the college (Those with fewest hours were granted priority.); commitment demonstrated by the individual to participate weekly in the campus study centers.

With the staffing completed, a projected 400 student per semester quota and the project participants identified, a massive recruitment effort was launched in August 1984. Newspaper, TV, and radio announcements on the new program were augmented by letters and flyers sent to local high school seniors, students in the GED

program, and those placed on probation and suspended during the previous spring semester.

Elements of the SSDS program were as follows:

1. Each student qualifying for the program participated in a three-hour seminar conducted by the SSDS staff. Normally, the project counselor and one or more developmental education instructors conducted each session. The handicapped specialist or ESL specialist assisted in the presentation according to the nature of the participants. Each "success session" consisted of three main parts: an interview and career and academic needs assessments; a review of testing results (including a learning styles inventory), and an action plan (prescriptive learning plan), which committed each student to regular weekly study center sessions and included a listing of short-range and long-range objectives.

2. Study centers were established at all three campuses, each supervised by one of the SSDS developmental education instructors. Each center had access to tutoring services, developmental resources, and a computer-assisted instruction (CAI) program. While the tutors and CAI were not part of SSDS, they were nevertheless available for use as required.

3. SSDS DEI's maintained regular contact with each of the project student's instructors. This contact included frequent classroom visits to check on progress, contact with students who missed class, and help to make up work that was missed, as well as conferences with the faculty to plan and develop better procedures in helping each student succeed.

4. SSDS organized field trips to work sites in the community, businesses, and facilities for students in their major areas of study.

5. Visits to the university were organized for students planning to transfer.

6. Each program student was provided with a mentor.

This last element deserves a special mention. The role of the developmental education instructor (DEI) as a mentor was well defined.

1. One DEI was assigned to supervise each study center. The English-as-a-second-language specialist and the handicapped specialist, along with the project counselor, worked all three campuses on a regular schedule according to the needs of the students participating.

2. Each student, individually diagnosed, was prescribed specific activities (independent study, small group teaching, tutoring, CAI) as needed with all activities recorded in his SSDS folder and maintained by the study center DEI.

3. The DEI's provided assistance to all students in their regular classroom study assignments and insured that project students availed themselves of other college resources (placement office, division counselors, etc.).

4. Finally, and probably most importantly, the DEI—mentor was enjoined to support, encourage, sustain, reinforce, bolster, comfort, care for, humor, and hearten all students through the formal and informal activities at their weekly contacts.

During its first semester of existence, the special services program was generally successful in meeting the assigned objectives. A total of 403 students were served by the project from September to December, 1984. For that semester, retention rate of SSDS students in the college was ninety-five percent (compared to a reported college rate of sixty-five percent). Maintenance of 2.5 GPA's at the eighty percent level was not achieved nor was the attainment of twelfth grade ability in reading and mathematics. We believe that this was not due to any shortcomings of the program or its staff, but rather to the unusually low competency levels of students admitted to the program, a fact probably not envisioned by the proposal writers.

In short, the Special Services for Disadvantaged Students program at the El Paso Community College has been nothing less than a series of "Success Sessions," not only for the students involved, but for the SSDS staff and the college as well. Any program aimed at keeping students in school that promotes the life-long learning concept and provides society with competent and contributing members must be labeled a SUCCESS.

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LEARNING DIFFICULTIES AND DISABILITIES: HELPING THE ADULT LEARNER TO COPE

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According to Dr. Barbara Cordoni (1985), Associate Professor of Special Education and Director of the Achieve Program at Southern Illinois University at Carbondale, 23 million people have learning disabilities (LD). Eight million are at college age or are approaching college age. Who exactly are the learning disabled?

The most widely accepted formal definition of LD was drafted in 1968 by the National Advisory Committee on Handicapped Children. Although the term children is used throughout the definition, the concepts underlying the definition do relate to adults. It was later incorporated into the Education for All Handicapped Children Act of 1975, Public Law 94-142. It states:

> Children with specific learning disabilities exhibit a disorder in one or more of the basic psychological processes involved in understanding or using spoken or written languages. These may be manifested in disorders of listening, thinking, talking, reading, writing, spelling, or arithmetic. They include conditions which have been referred to as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, developmental aphasia, etc. They do not include learning problems which are due primarily to visual, hearing, or motor handicaps, to mental retardation, emotional disturbance, or to environmental disadvantage. (Section 121a.5, Federal Register, August 23, 1977)

It is important to note that, unlike persons who are mentally retarded, learning disabled persons have average to above average intelligence. They do have difficulty perceiving or taking information in through the senses (visual, auditory, tactile/kinesthetic) and inter-

preting it. Brown (1980) states, "In general, they are capable of learning and performing at their age level, but their learning is affected by the problems they have with perception. They tend to have unique ways of gathering information from the world around them."

Types of Learning Disabilities

Learning disabilities is a term which covers many problems. Table 1 discusses major categories.

Table 1

Major Types of Learning Disabilities

Auditory Perceptual Problems—refer to difficulty taking information in through the sense of hearing and/or processing that information.

Auditory Discrimination Problem—difficulty telling the difference between similar sounds, such as "m" and "n"; hearing "fourteen" instead of forty." The phrase "one-fourth cup of vinegar" might be interpreted "won for caps viganer."

Auditory Figure-Ground Problem—difficulty hearing a sound over background noise, such as the inability to hear an instructor's voice over the buzzing of the florescent lights.

Auditory Sequencing Problem—difficulty hearing sounds, words, and phrases in the correct order, such as "3-7-5" instead of "5-7-3" or "viganer" instead of "vinegar."

Visual Perceptual Problems—refer to difficulty taking information in through the sense of sight and/or processing that information.

Visual Discrimination Problem—difficulty seeing the difference between two similar objects, such as "v" and "u" or "m" and "n."

Visual Figure-Ground Problem—difficulty seeing a specific image within a competing background, such as picking out one line of print from others in a book.

Visual Sequencing Problem—difficulty seeing things in a correct order, such as "was" for "saw."

A person who has visual perceptual problems might see the following, "E ach ch ilb mitha le are mimp bisadilith is am ivbivibnal" rather than "Each child with a learning disability is an individual."

Motor Problems—refer to the difficulty one has moving his/her body efficiently.

Perceptual Motor Problem—difficulty performing a task that requires eye/hand or eye/foot coordination because of inaccurate or faulty information received through the senses. Writing can become a difficult chore for someone with a perceptual motor problem as can trying to hit a baseball.

Visual Motor Problem—difficulty seeing something, then doing it, such as copying items from a blackboard.

Auditory Motor Problem—difficulty hearing something, then doing it, such as taking notes in a lecture or following instructions.

The difficulty a LD person has with perception is analogous to that of a train which encounters a "rough spot" on the track causing its cargo to get shuffled around. The cargo is still all there, just not in the same order. The same is true with a learning disabled person; the messages are still received, but in a slightly different order than originally "transmitted."

Recognizing Learning Disabilities

A learning disability has often been referred to as a hidden or invisible handicap since there are no overt physical characteristics associated with it. The following list provides some behaviors a learning disabled person might exhibit. The list is not all-inclusive, nor will every learning disabled person exhibit each and every behavior.

1. Apparent inconsistencies in daily academic work. Demonstrates difficulty in reading, writing, spelling, and/or using numerical concepts despite average to above average skills in other areas;
2. Inappropriate written work. Handwriting will be poorly formed; work may appear sloppy because of inconsistent slant or spacing;
3. Appearance of clumsiness or poor coordination;
4. Easy distraction from the task at hand; has difficulty attending to tasks;
5. Difficulty managing or planning time; often appears disoriented; not aware of importance of time limits; confuses yesterday and tomorrow, before and after, last week and next week;
6. Difficulty understanding body language or subtleties of vocal

messages;

7. Difficulty following multiple directions; often asks to have things repeated;

8. Difficulty with directionality; up, down; right, left; north, south; east, west;

9. Appearance of disorganization: forgets or loses things; often shows up for class without needed materials; difficulty following schedules;

10. Inappropriate responses in school or social situations; excessive anger or anxiety;

11. Difficulty copying from books or blackboards; often copies inaccurately;

12. Difficulty expressing thoughts and ideas;

13. Reversal or confusion of similar letters (b, d; p, q), numbers (3, 8), or symbols ($,x; -,-);

14. Alteration of sequence of letters (the, teh) or numbers (32, 23); often will alter phone numbers;

15. Frequent inablility to say what is meant; says words strangely; difficulty remembering names of familiar people.

Many persons will be able to identify with many of the behaviors listed above. We all forget an appointment every now and then or reverse a number here and there. That does not mean that we are all LD. Likewise, the classroom instructor will be able to identify students within a class who exhibit many of the listed behaviors. How does one tell whether the student is truly LD or underprepared, lazy, or merely has a negative attitude towards education?

The key to the answer is the matter of degree to which the person is affected by the inability to perform certain tasks. A "learning problem" becomes a disability when the problem is different enough so that a lot of people notice it; basic life tasks are made difficult and extra assistance is needed to function. If one should consistently exhibit one or more of the listed behaviors to the degrees mentioned above, that person needs referral for assessment and diagnosis.

Programming for the Learning Disabled Student

Many of the 8 million LD college-age students have already entered postsecondary institutions. Under Section 504 of the Rehabilitation Act of 1973, these adults with documented learning disabilities have the same legal entitlements as adults with physical disabilities. Section 504 prohibits discrimination on the basis of handicap against persons in programs or activities receiving or benefiting from federal assistance. In a postsecondary educational setting,

Section 504 mandates "reasonable accommodations" for learning disabled students, in the same way it mandates curb cuts and ramped entrances to classroom buildings for physically disabled students.

According to Howard (1985), while LD postsecondary students are entitled to "reasonable accommodations," there is no clear definition to use for determining what is or is not reasonable. As a result, modifications can, and will vary from one institution to the next. However, no matter what the modification, standards should never be lowered, and students should be expected to produce the same amount so that they truly earn their grade. Table 2 indicates common program modifications

Table 2
Common Program Modifications for LD Students

Textbooks

- Provide course syllabus well in advance so student can organize term and/or obtain nodified material
- Provide a study guide, study questions, or review sessions to aid in mastering material and preparing for exams
- Allow the use of large-print books or tape-recorded books

Printed Course Material

- Type handouts in larger, clearer print
- Double space handouts
- Condense information (lists of main ideas)

Lectures

- Permit taping of lectures
- Allow note takers
- Begin lecture with review and overview of topics to be discussed
- Use chalkboard or overhead to display key concepts or technical terminology; always read what is on the board or overhead

Written Assignments

- Allow proofreaders
- Allow alternate formats such as taping, visual displays, or oral presentations
- As appropriate, allow a writer to record student answers

Exams

- Allow alternative timing
- As appropriate, permit test reader, writer, oral or taped exam
- Provide essay instead of objective test or vice versa
- Permit test to be taken in a quiet environment
- Permit student to mark exam rather than a separate answer sheet; provide alternative to computer-scored answer sheets
- Analyze process as well as final solutions; review exam to determine types of errors, etc.
- Permit alternative methods of demonstrating mastery of course content
- Avoid double negatives or complex sentence strucures

Strategies and Techniques

Table 3 is designed to help instructors match strategies and techniques (in basic skill areas) to a student's learning style.

Table 3
Learning/Teaching Styles

Spelling

Approach	*Auditory*	*Visual*
VAKT (Visual, auditory, tactile, kinesthetic) Fernald	A. Say word 1. Say each letter *2. Close eyes/say word/spell word/check word 3. Close eyes/say word 4. Open eyes/write word *Trying to *hear* sounds of letters in mind	A. Look at word 1. Close eyes/make picture of word 2. Read letters from picture in mind 3. Open eyes/write word

Reading

1. Word Attack		
Glass Analysis	A. Phonics approach B. Oral reading	A. Sight word/look-say approach B. Configuration
Gillingham	C. Talk way through tasks	C. Reference pictures

Language experience	D. Poetry to reinforce sound patterns	for sounds D. Color code sounds E. Flashcards F. Word banks
2. Comprehension		
Neurological Impress	A. Taped material B. Partners C. Discuss material afterward	A. Color code who, what, where, etc. B. Outline stories C. Study guides
Language Experience	D. Read orally before silently E. Rephrase material F. Give directions orally—have students retell what task is G. Tape stories—student retells	D. Note taking
3. Vocabulary		
Cloze	A. Taping B. Play games —checkers —bingo	A. Flashcards B. Associate words with images
Language Experience	C. Language master	C. Word blanks D. Teach new vocab before lessons E. Present words in context
Math		
Activities Finger multiplication Other multiplication methods Games Recipes Labels	A. Recite problems	A. Flashcards B. Graph paper C. One problem per page D. Use checklists E. Illustrate—draw pictures

Study Skills

Auditory	Visual
Cornell note taking method along with listening to taped lecture or book	Cornell note taking method SQ3R
SQ3R combined with much verbalization with each step	

Coping in Social, Emotional and Vocational Situations

Learning disabilities are not limited to academic situations. In fact, only one-fifth of a person's time is spent in an academic setting. The other four-fifths is spent in social/vocational settings.

Many LD adults may have social skills problems due to their inconsistent perceptual abilities. For the same reason a person with visual perception problems may have trouble discriminating between the letters "m" and "n," she/he may be unable to detect the difference between a disgusted glance and a light-hearted wink. Persons with auditory perceptual problems might be unable to detect differences in sarcastic and sincere comments.

Social problems also exist because of disinhibition (difficulty behaving appropriately in an automatic way), impulsivity, isolation, emotional difficulties due to negative experiences, imitation of inappropriate behavior, and difficulties associated with having an "invisible handicap."

Specific social difficulties include: interpreting what is said (words, tone of voice, facial expressions); giving appropriate nonverbal signals (voice tone, facial expressions, and body language at variance with what one feels and/or wants to project); small talk; conversation; dealing with authority.

To assist the LD person in dealing with social problems, the following procedures are recommended: teach social skills naturally in academic situations; explain how the learning disability affects the social skill; discuss the skill in question; role play the skill/situation; be specific with feedback; be honest and direct.

LD persons who are unaware that they have a learning disability will experience many emotional dilemmas. They do not understand why they are often rejected or why they must struggle for what comes easily to others. Since they lack knowledge of their learning disabilities, four possible causes seem (erroneously) to explain their

problems: craziness, low intelligence, low motivation, personal weaknesses. All four explanations lead to low self-image which paralyzes their desire to improve.

Even the LD person who has been identified may suffer severe emotional problems because of the label she/he now wears. A label can be harmful if nothing is done to help the person improve. Oftentimes, less is expected of a person who is labeled. Many persons will fulfill those lower expectations and do poorly. They also may be hesitant to take risks. Frequently, the person will be ashamed of the label and become involved in denial.

In coping with the label problems, informal counseling of the learning disabled person is extremely beneficial. Effective counselors: provide specific information on the handicap; discuss prominent persons who are learning disabled; present information clearly; validate the difficulties, but provide positive reinforcement for things attempted; acknowledge that a problem is caused by the disability; listen nonjudgmentally and uncritically; deal with self-pity.

The social and emotional problems a LD person experiences are likely to follow the person into the world of work. Learning disabilities can have the following effects on one's work: inefficiency; errors; accident proneness; difficulty with academic skills (writing memos, reading instructions); problems in learning a sequence job tasks; time (arrival at work, meeting deadlines); social skills problems. It is critical for the person to choose a job not in the area of a disability.

As educators, we must help LD students engage in career exploration; help them learn about and find their strengths (the job must be based on the person's strength); promote early job hunting experiences; and encourage informational interviews. Encouraging a person to join a self-help or support group is also advised.

Resources

A few professional groups or organizations one might find useful are: President's Committee on Employment of the Handicapped, National Network of Learning Disabled Adults, Association of Children and Adults with Learning Disabilities, Orton Dyslexia Society, Association on Handicapped Student Services Program in Postsecondary Education, Council for Exceptional Children, Western College Reading and Learning Association Learning Disability Special Interest Group.

Remember that a learning disability is a hidden handicap. The casual observer doesn't realize that the difficulties in processing information cause the person to cope differently from others in learning and living situations.

The LD person tends to have unique ways of gathering information from the world around him/her. Dispite many having similar problems, the learning disabled are like snowflakes; no two are alike.

For successful interactions with LD persons, be attuned; be sensitive; believe in him/her as a learner; create an atmosphere in which she/he feels good about him/herself; accentuate the positive; avoid sarcasm; build success into all you do; be flexible; be consistent; and, most of all, be caring.

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TYPE PREFERENCES OF TEACHERS AND STUDENTS IN DEVELOPMENTAL STUDIES

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Educators have long accepted the importance of recognizing and nurturing individual uniqueness. One theory which leads to greater understanding and appreciation of individual uniqueness is based on Carl Jung's theory of psychological types. Jung theorized that much of what seemed to be chance variation in human behavior is not due to chance at all; rather, it is the logical result of a few basic, perceptible differences in mental functioning (Myers,1980). Isabel Myers and her mother, Katharine Briggs, slightly modified and elaborated on Jung's conceptual framework to provide a structure for understanding both similarities and differences among individuals. The resulting instrument, The Myers-Briggs Type Indicator, is probably the simplest and most reliable method of determining a person's Jungian type and is being used widely as a research tool to aid in the understanding of human behavior. Databases are already established for nursing and medical students, Armed Forces personnel, and various areas of education and engineering, to name only a few. This information is available from the Center for Psychological Type in Gainesville, Florida.

Jung's Theory of Psychological Type

In 1921, Carl Jung published the results of his twenty years of work on psychological types. In these studies, Jung identified and described several basic psychological processes, and he showed how these processes merged in various combinations to determine an individual's character. Jung wrote that it was one of the greatest experiences in his life to discover how enormously different people's psyches are (Hall and Nordby,1973).

Jung's psychological types described patterns in the way people prefer to use their minds in perceiving their environment and making judgments about it. In Jung's theory, all conscious mental activity can be classified into four mental processes or functions: two perception processes (sensing and intuition) and two judgment processes (thinking and feeling). Information that comes into conscious

thought comes either through the senses or through intuition. To remain in consciousness, perceptions must be sorted, analyzed, and evaluated by the judgment processes, thinking and feeling.

All four mental processes: sensing, intuition, thinking, and feeling are used regularly, but not equally well, by each person. From an early age, an individual tends to rely on one process more than the others, and that dominant process forms a core of the personality. A person whose dominant mental process is sensing perception is practical, tuned in to the facts and realities of a situation, while a person whose dominant process is intuitive perception deals with abstractions, associations, theories, and possibilities. When the strongest mental process is thinking judgment, the person possesses an orderly analytical mind and looks at his/her environment objectively. When feeling judgment is the dominant process, the individual focuses on humane issues and seeks harmonious relationships.

In Jung's theory, the two kinds of perception, sensing and intuition, are polar opposites of each other (Lawrence, 1979). Likewise, the two kinds of judgment, thinking and feeling, are opposites. A person may shift from one type of perception to another very quickly; however, it is not possible to attend to both simultaneously. That person's life would be one-dimensional. To counteract a one-dimensional personality, a person must develop an auxiliary process. This auxiliary is always formed in the dimension where the dominant is not. For example, a person with sensing or intuition as the dominant process will have as the auxiliary process either thinking or feeling. Likewise, a person with thinking or feeling as the dominant process will have sensing or intuition as the auxiliary process. The combinations of dominant and auxiliary results in the formation of eight sets.

These eight sets expand to sixteen sets with the addition of Jung's third dimension of personality structure. These sixteen sets are referred to as the Jungian preference types (Lawrence, 1979). Jung called the third dimension extraversion (turning out) and introversion (turning in). A person who uses the dominant process to cope with the environment is extroverted; however, a person who uses the dominant process mainly for inner thoughts is introverted. The dominant process reveals the most about a person's personality: extroverts reveal their dominant process first; introverts reveal mainly the auxiliary process to others, reserving the dominant process for the inner world.

Katherine Briggs' and Isabel Myers' contribution to Jung's theory of psychological type involved the addition of a fourth dimension: attitude toward the outer world (Lawrence, 1979). When a judgment process is used, the natural bent is to have things

organized,planned and settled; whereas, when a perception process is used to run one's outer life, the tendency is toward keeping plans and organization to a minimum in order to be flexible and adaptable to new circumstances.

The Myers-Briggs Type Indicator (MBTI) is a forced choice questionnaire that highlights the four preferences of a person's type. Note the designations and descriptive term for the eight characteristics:

E—Extraversion (outer world)	I—Introversion (inner world)
S—Sensing (practical)	N—Intuition (possibilities)
T—Thinking (objective)	F—Feeling (subjective)
J—Judging (order)	P—Perception (flexible)

Teacher Types

It is important for teachers to know their own psychological types. Information from the MBTI database on education reveals that all sixteen types are represented among teachers who have taken the Myers-Briggs Type Indicator (Lawrence, 1979). The records indicate that extroverts and introverts are about equally distributed among teachers, but the proportion of intuitive types increases as grade level rises. Grade school, junior high and high school teachers tend to show a predominance of feeling types; among college teachers, there are more thinking than feeling types. Judging types consistently outnumber perceptive types at all levels.

Content area preferences and teaching styles are also reflected in typical behavioral patterns. For example, extroverted teachers tend to permit more student choice and alternative activities, while introverted teachers use more structure and emphasize ideas. While sensing teachers emphasize concrete skills, intuitive teachers emphasize relationships and implications. Thinking type teachers characteristically are teacher-centered with the entire class being treated objectively; feeling type teachers characteristically are more student-centered and prefer to work with students individually. Judgment type teachers have more orderly classrooms while perceptive type teachers allow more movement and group involvement.

Each type has strengths and weaknesses, but each makes a valuable contribution to the classroom. Students benefit from the various types, receiving support from teachers of like type and the challenge of interaction with teachers of different types. Teachers benefit from knowing their type in that they can better understand their teaching style and what lies behind it.

Student Types

Gordon Lawrence (Lawrence, 1979) believed that the most important aspect of psychological types for teachers to understand is the power of the dominant process. He believed that the most effective learning takes place when thinking types are allowed to pursue logical order, feeling types follow their hearts, sensing types master practical skills, and intuitive types follow whatever inspires. Understanding the power of dominant mental function among diverse students facilitates the instructional process.

The sixteen types are represented but not evenly distributed among the overall student population. The following estimates are composites of Myers' data (Myers, 1975) on students:

Extraversion	70%	Introversion	30%
Sensing	70%	Intuition	30%
Thinking (female)	40%	Feeling (female)	60%
Thinking (male)	60%	Feeling (male)	40%
Judgment	55%	Perception	45%

Thus a typical classroom of 35 students would have this distribution of types: introverted sensing (IS) 7, introverted intuition (IN) 3, extroverted sensing (ES) 18, extroverted intuition (EN) 7. This distribution, however, would probably be different for elective courses since students' type preferences often influence their choice of electives.

Data on type theory indicate that the dropout rate is much higher for sensing students. Isabel Myers (Myers, 1975) type data on 500 people who did not finish the eighth grade indicated that 99 percent of them were sensing types.

Characteristic learning styles for the various student types parallel the teaching styles for the teacher types. That is, extroverted students tend to like groupwork, fast-paced activities, and oral work. Introverted students prefer to do written work alone in a relatively quiet atmosphere. Sensing students are more attuned to concrete experiences, working with facts in an orderly way. Intuitive students are expecially interested in making associations or seeing relationships among ideas; they tend to be impatient with detailed work. Thinking type students prefer to deal logically with ideas while feeling types focus attention on personal, harmonious relationships. Judging types tend to be more self-directed and tolerant of routine as opposed to perceptive types, who delight in the unplanned and flexible way of life.

Influences of Type on Instruction

Margaret Morgan, has developed classroom learning styles for each of the sixteen MBTI types (Lawrence, 1979). Essentially, she described sensing students as linear learners, who prefer a sequential, step-by-step approach to learning tasks, and intuitive students as global learners, who see the gestalt of the task first. Therefore, sensing types like direct experience: reading, audiovisuals, lectures, and locically structured materials. Intuitives like to consider theory first and then application, so they prefer seminars, group work, and open-ended instruction. Of course, extroverts prefer much discussion and activity while introverts prefer working alone. Thinking types like to analyze situations in an orderly fashion, while the feeling types like harmonious group projects and team competition. Judging types prefer structured activities and value closure, unlike the perceptive types who seem to perform better in flexible classrooms where there is provision for variety and change.

These relationships noted by Morgan have also been supported by McCaulley and Natter (1974) in their work with disruptive children.

The implications for considering type preferences of teachers and students in the classroom are many and varied. Each of the sixteen types is gifted and valuable in creating a climate where teaching and learning can take place. This diversity of gifts encourages growth in the appreciation of individual differences. In conflict situations, usually the participants are not being contrary and purposefully argumentative; they are simply employing their dominant force for dealing with the situation. The dominant force is powerful, comfortable, trustworthy, and reliable for coping with the demands of living and learning. May the force be with you!

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FACULTY PERCEPTIONS OF A UNIVERSITY PROGRAM FOR NATIVE AMERICAN STUDENTS

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The literature on higher education programs for Indian students is very sparse. Less than ten references could be located in the ERIC system, and few of those were data based. The best of the references, by Nelson (1972) and Oakman (1976), discuss the cultural problems Indian students encounter when enrolled in traditional education programs.

The Brigham Young University Indian Education Program began with 40 students in 1966 and now includes about 500 students. It consists of nineteen full-time faculty with academic appointments, twelve staff personnel, and a department chairman who reports to the Dean of Student Life. About 40 percent of the students eventually obtain the bachelors degree, and of that group, 44 percent have enrolled in graduate school. Graduates of the program, include two college presidents, a former acting Commissioner of the federal Bureau of Indian Affairs, and a substantial number of state and tribal education administrators. Others have entered such professions as medicine, law, engineering, and social work.

The present study follows Roueche's 1982 national survey (Rouche, Baker & Roueche, 1984) of college programs for low-achieving students. In that study, 11 elements (Roueche, 1983) of successful programs were identified: strong administrative support, mandatory assessment and placement, structured courses, award of credit, flexible completion strategies, multiple learning systems, volunteer (paid) instructors, use of peer tutors, monitoring of student behaviors, interfacing with subsequent courses, and program evaluation. For this study, with permission, Roueche's questionaire was adapted to a questionnaire-interview procedure with the nineteen faculty members of the Indian Education program at Brigham Young University. Most of the faculty members surveyed have taught in the program for more than twelve years.

The study found the elements indicative of a successful program,

as identified by Roueche, apply strongly to the Brigham Young University Indian Education Program. Most of those eleven success factors appear in the findings of the study.

Administrative Support

The administrative decision to maintain a high level of university support was singled out by all nineteen respondents as the key element in the success of the program. Support ranges from the formation of a separate academic department, whose sole function is the support of Indian students, to the establishment of financial awards available to all Indian students. A breakdown of university support is as follows:

Faculty

The selection of faculty members to teach basic skills and general education courses for Indian students ranks as an important ingredient by all respondents. These faculty members hold dual rank in Indian Education and a discipline department, (i.e. English, mathematics) and are hired primarily because of their proven teaching expertise with high school minority group students. Most faculty hold the doctorate degree, while a few hold masters. One is an internationally known publishing scholar in the field of biology. Another is nationally known in western history.

Courses

All respondents mention the control of courses as another key element in the success of Indian students. Courses taught by the Indian Education faculty members include general education (usually lower division courses) in such subjects as English, mathematics, history, chemistry, biology, sociology, and health, as well as basic skills courses in study skills, reading development, and career exploration. All courses award credit, are listed in the catalog and class schedule, do not deviate from departmentally imposed syllabi, are recommended rather than mandated for Indian students, and are not restricted to Indian students only. Indian students, however, are given preference in enrollment in the classes taught by these nineteen faculty members.

Additionally, this department has offered a strong Native American Studies undergraduate minor, which has attracted both Indian and non-Indian students. The minor offers some fourteen

classes,ranging from freshmen to senior level.

Financial Aids Office

This office works with Indian students in applying for tribal scholarships, government grants, foundation and corporation grants, and university awards. It also assists students in setting up budgets and in obtaining part-time campus employment. A substantial endowment fund from private sources has also been accumulated for use in the program. Most students receive financial awards which cover most, if not all, of their financial and educational needs when enrolled at the university.

Academic Advisement Office

As with all of the above items, the Advisement Office rates a unanimous plus factor in the success of Indian students. This office is responsible for monitoring the progress, maintaining eligibility for financial aids and good academic standing in the University. It also assists with class registration and provides help in the selection of academic majors.

Tutoring Lab

Eighty percent of the respondents feel that the tutoring lab, which focuses primarily on English and mathematics, is a vital support source. Twenty percent, however, feel that the campus learning laboratories maintained in other academic departments can adequately handle all Indian students.

Other Services

Other services ranked high by the respondents included: (1) summer programs for high school juniors and seniors which focus on building self-esteem and emphasize career choices; (2) a campus-wide Indian club with elected officers and varied activities; (3) an annual Indian week, which attracts 7,000 participants and spectators to various events; (4) leadership development courses and workshops; (5) a news magazine published four times a year with a circulation of 4000; and (6) a funding development program.

Teaching-Learning and the Native American Student

Although the teaching styles of the faculty vary substantially, ranging from lecture to class discussion to problem solving techniques, most surveyed teachers state that Indian students are typically visual learners and holistic in their approach to learning. Current on-campus research by two members of this faculty suggest that the majority of Indian students tested by them operate primarily from the right hemisphere of the brain. So, although the respondents agree that the learning style of the Indian students was different from that of non-Indians, there is no consensus of precisely what teaching style is most effective. Some advocate self-paced modules while others opt for group sessions or lectures supported by visual aids. Almost all of the faculty do allow for special help sessions and practice an open-door office policy to welcome students for individualized help.

As stated earlier, faculty members for this program are chosen because of their previous successful teaching experience. However, other faculty members from various departments on campus do volunteer to teach courses for minority students and frequently are asked to do so.

Peers are relied on heavily in the tutoring lab, in help sessions, and as dorm tutors and counselors for the summer programs. In most cases, these students are hired as part-time employees.

Monitoring Student Progress

Faculty members are instructed to report excessive absences, poor test scores, and homework delinquency to the Advisement Center. The Center then contacts the student to offer assistance through the lab or personal tutoring and counseling.

The Advisement Center, through computor hook-up, also monitors student grades and progress as well as reviewing the success rate of Indian students in courses and majors. When trouble spots are identified, help sessions, faculty reassignments, and restrictions on class size can be instituted.

Problems and Concerns

The interviews with the faculty members disclosed a number of problem areas and concerns. Some of these were somewhat unexpected; others supported assumptions that Indian educators have long held. The most frequently mentioned items include the following.

Vocabulary

Seventy percent of the respondents are concerned with the lack of proficiency in the use of English vocabulary.

Although many of the Indian students at BYU do not use English as the language of the home, they appear, as judged by their conversational ability, to have an adequate command of English. However, the ability to read the density of ideas and specialized vocabularies of college textbooks is usually deficient. Although no studies are available to gage accurately the level of vocabulary proficiency, faculty members comment repeatedly on the inability of Indian students to read their textbooks with understanding. Some even wonder if the texts are read at all.

Over the past decade, for example, one of the mathematics instructors has investigated data which indicate that Indian students have more difficulty in understanding the terminology of mathematics than they do in understanding the mathematical concepts themselves.

Cultural Adjustment

Nearly all of the instructors comment on cultural differences and the adjustments that are made by both students and instructors in order to promote an effective learning environment. Time management is an example. Another is self dependency instead of group dependency. Non-competitive learning is still another value system. The importance of a college education in one's value system constitutes another. Further intensifying these problems are differences among different tribes.

Family Support

Some respondents point out the lack of family support. Not only is the distance from home to campus an obstacle, but the Indian student is often the first in his family to attend college. Some parents have limited ability and inclination to provide encouragement to a child in college if they themselves are functionally illiterate.

Study Habits

A majority of the faculty respondents cite poor study habits, lack of time control, and failure to establish long range goals, including choosing a major, as serious impediments to the success of the

Indian student. As a group, the teachers are strongly concerned about the need for Indian students to have role models, to make early career choices, and to manage their study time effectively.

Recommendations

Among the recommendations that the faculty gave are the following.

1. Better preparation of prospective teachers of Indian students in order to understand cultural differences and to work effectively with people of variant cultures.
2. Better predictive tests. If ACT or SAT scores and high school grades are not valid predictors for Indian students, then what instruments or assessments can be used?
3. Refinement of curricular offerings to include better courses in study skills, reading and vocabulary development, and career exploration.
4. Development of an orientation program that introduces Indian students to campus, especially to the service offices, labs, counseling centers, and academic advisement offices that provide direct and immediate help.
5. Development of better techniques and/or programs to enhance self-esteem, leadership skills, motivation, and encounters with role models.
6. Development of college-bound high school programs that would assist Indian students in preparation, planning, and pursuing college admission.
7. Development of improved monitoring programs to track student progress and intervene promptly when problems occur.

Conclusion

In summary, the study offers support to the components identified by Roueche as typical of successful college basic skills developmental programs. Though the sample is small, the experience of the instructors, the size and long-term record of the program, and its retention figures lend credibility to the findings. In the four areas of administrative support, teaching-learning styles, monitoring student progress, and problems and recommendations, the study resembles other reports of college level developmental programs for low achievers in minority groups. Special adjustments to the needs, and culture, and problems of Indian students, however, must be superimposed on such programs to encourage retention in a field

which averages more than a 90 percent dropout rate on most university campuses.

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A SUPPORT PROGRAM FOR ACADEMICALLY DISMISSED STUDENTS

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Attrition and decreasing enrollment currently affect both community colleges and universities. According to Garni (1980), this problem is unlikely to disappear. During the 80's, student enrollment will continue to decrease, and attrition will increase. Educational institutions must address these problems by enhancing student success.

Schoolcraft College, a community college located in a suburb of Detroit, also faces the problem of assisting unsuccessful students. Schoolcraft has an open-door admission policy. Students may self-advise after attending one semester; therefore, inappropriate class selection may occur. Since many students work while attending school, time spent on academic work is affected. As a result, some students experience repeated academic difficulty.

Schoolcraft addressed this problem by implementing a support program for academically dismissed students to provide services designed to enhance academic success. Students who have attempted fifteen hours with cumulative GPA's below 1.75 are placed on probation. Those who have attempted thirty hours and have earned a cumulative GPA below 1.75 are academically dismissed. In order to serve the dismissed student, a comprehensive, interactive unit, which involved the Office of Instruction, Learning Assistance Center, Counseling Department, student, and instructor, was created to facilitate the operation of this program. This interactive unit was structured to monitor the activity of academically dismissed students throughout the semester.

The monitoring process is initiated by the Registrar's Office, which mails an explanation of the program with the transcript indicating academic dismissal. The student who wishes to be considered for readmission must first write a letter to the Dean of Instruction. After approval by the dean, the student makes an appointment with

the LAC to assess the learning situation and to design an individually prescribed learning contract. A learning contract is created from the following information: the letter the student submits to the Dean of Instruction, which describes the reasons for failure and possible solutions to the problems; assessments in reading, writing, and math to identify basic skill deficiencies; and a diagnostic interview, which allows for further analysis of the situation, as well as a discussion of study skills and learning strategies. Based upon the information gathered, the student and learning specialist design appropriate monitoring procedures. These may include intensive counseling, biweekly appointments to monitor learning strategies, midsemester reports from instructors, learning laboratory work, and peer tutoring. After the contract has been agreed on, the student meets with a counselor to select classes and participate in other counseling services.

Academically dismissed students are limited to two classes, or six credit hours, for two reasons. First, students discover that there are consequences for their lack of academic progress. These students have habitually failed classes over several semesters; therefore, they will not have total freedom to create their academic environment. Second, we have found that students are more likely to succeed if their focus is upon limited tasks. Most of the academically dismissed students' basic skills are adequate; however, they have difficulty establishing priorities and managing time. As a result, the six-credit limit reduces the demands made upon them, thereby creating a manageable class load.

Throughout the semester, contact is maintained with the student's instructor to assess the learning situation. Information regarding academic progress, obtained from the instructor, is shared with students, and intervention strategies are utilized if apropriate. In effect, there is interaction between the salient forces in the student's environment to create a support network.

Program evaluation has been conducted at the end of each semester. Statistics have been compiled utilizing grades and cumulative GPA changes. As Table 1 shows, results are encouraging.

Table 1
Success Rates of Program Students

Semester	# of Students Participating	Increased GPA'S	Unchanged GPA'S	Decreased GPA'S	Off Ad
Fall 84	36	81%	11%	8%	50%
Spring/Summer 84	17	41%	59%	0	5%
Winter 84	32	67%	24%	0	27%
Fall 83	33	67%	21%	15%	33%
Spring/Summer 83	17	75%	18%	6%	18/
Winter 83	30	77%	10%	13%	27%
Fall 82	20	80%	15%	5%	35%
Spring 82	3	*50% of the grades received by the students referred to the LAC were "C" or better.			
Winter 82	9	*71% of the grades received by the students referred to the LAC were "C" or better.			
Winter 81	6	*75% of the grades received by the students referred to the LAC were "C" or better.			

**Data were collected in a different format.*

At the end of each semester, the following action is taken:

1. Students who did not make satisfactory progress are not permitted to register.
2. Students who made satisfactory progress are permitted to re-enroll and required to initiate a learning contract for the new semester with the Learning Assistance Center.
3. Students whose GPA's increased enough to be removed from the academic dismissal status are encouraged to continue interaction with the Learning Assistance Center in order to maintain their academic progress.
4. Students whose GPA's remained unchanged are counseled in-

dividually with appropriate academic action implemented.

The program has been very successful in view of the fact that this particular group of students had not been successful over a long period of time. The success of the program is attributed to the following strengths:

1. One office coordinates the procedure.
2. There are consequences. If students do not fulfill responsibilities, they will not be permitted to re-enroll.
3. Faculty cooperate by sharing information on student progress.
4. Limiting students to six-credit hours allows them to succeed.
5. Students do not have the opportunity to self-advise. Proper placement occurs.
6. The Dean of instruction is involved in and supports the program.
7. Intrusive support intervention techniques are utilized.
8. The procedure is not too cumbersome but requires enough steps to cause the student to wish to be free of constraints.
9. Only two staff people create learning contracts. This allows for controlled, consistent service.
10. The tracking system is workable.

The LAC found the most prevalent problem not to be academic deficiency, but rather a lack of commitment and study skill knowledge. Brozo, Schmelzer, and Thurber (1982) also found that intervention programs should focus on developing learning strategies. Successful and failing students can be differentiated by their use of study skills. Roueche (1983) reported that successful skills development programs monitor student learning behaviors. At Schoolcraft we found that intervention techniques provided someone who cared as well as specific strategies for academic success

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THE HIGH-RISK STUDENT AND THE INTEGRATED COURSE

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In the fall semester, 1982, at San Diego State University, the Academic Skills Center and the Educational Opportunity Program (EOP), a California program for non-traditional students, began a system of coordinated general education and skills courses for identifiable high-risk students. Selected groups of incoming EOP freshmen were assigned writing and/or reading courses in conjunction with and slanted toward the content of a specific general education course. The students were to attend the classes as a group. The staff hoped that this approach would provide students with the academic skills necessary to succeed in the specific content course. The staff also anticipated a transfer of learning skills to other courses, thus reducing the high attrition rate of our underprepared entering freshmen.

We now know these packaged courses work. In our initial semester using the package, reading gains by package course students were almost twice as high as those for non-package reading students (Denman, 1983). Probation rates were halved, and follow-up studies indicated that 60% of these initial students were in school two years later (Corona & Keitel, 1985). So far, there have been more than 100 packages with 1500 students, with all package groups having better performance than the non-package groups of EOP students. These are students who scored in the lowest quartile on their SATs, students who historically have had very low retention rates in colleges and universities. With the package program, they are being retained in the university. The purpose of this paper is to show how this program functions.

The ACCESS Program

ACCESS is an acronym for Advising, Counseling, Coordinated, English Skills, Support. Students are selected for participation on

basis of low SAT scores. When the selected students appear for registration, a member of the EOP staff acquaints them with the program. Students are then given a pre-prepared schedule which includes a package of reading and writing courses and a general education course to be taught in tandem with them. Although students are not required to accept one of the packaged schedules, they are informed that acceptance of the schedules gives them a much better chance of success in their initial year at the university. Nearly all accept the packages. Schedules contain fourteen units of coursework, six of them in writing and reading. Although these skills courses are not countable toward graduation, they do count for financial aid, a concern for nearly every EOP student.

Once in the program, students must attend classes regularly. They are also required to attend two study sessions with a graduate tutor each week. In the reading course, students, in addition to completing all the assignments, must make a twenty-percent improvement in reading skills to receive credit for the course. They are told that they may take the university writing competency requirement exam at the end of the semester if they have completed all the assignments for the writing course, although credit for the course is earned by completing its internal requirements, whether or not students pass the competency exam. If students do not pass, they go on to the second semester of writing, which is conducted in small tutorial groups outside the ACCESS program, but in the Academic Skills Center.

A key feature of the package courses is the assignment of graduate tutors from the Academic Skills Center. The program started with separate tutors and instructors for the reading and writing classes. Now, however, one tutor is assigned to assist one instructor in both of the skills classes. The tutor may also be a graduate assistant for the general education course.

In addition to conducting the study groups for two hours each week and assisting in skills classes, tutors attend every class in the content course with the students, sitting down front in class and taking careful notes to set a good example for the students. Additionally, tutors are able to keep the skills instructor informed about the pace of the content class. Tutors are responsible for suggesting writing assignments that support the content course and for monitoring student progress in the content course midterm exams.

In the writing classes the students write summaries of the most recent lecture from the content course, thus gaining skill in writing while reinforcing their learning. The writing courses are not, however, simply study courses for the academic content course. The students

learn basic writing skills, aiming at passing the competency requirement and going on to Freshman English. Our research shows that students from the Academic Skills Center writing courses make a B- average in Freshman English, Their success rate surpasses that of the students who come into Freshman English from the high schools and community colleges (Basile, 1983).

Although the packaged reading class making the most improvement used reading skills texts (Baldridge's *Seven Strategies*, Troyka's *Structured Reading*, and the McGraw Hill *Basic Reading Skills Set*), not all reading classes are taught thus. Most classes combine reading material with the content course textbooks, using these texts to practice reading skills. Some classes use only the content course books, finding the main points, significant details, and inferences within the content course assignments. But again, the reading courses are not simply preparation courses for the particular content course. The goal is to develop total reading skill, transferable to all courses. To that end, the students are expected to spend six hours a week outside of class working on their reading skills: some time is to be spent in the lab, some at home, and some in the library.

Counseling is an important part of this program; student progress is monitored carefully. By the end of the fifth week of the semester, requests for reports on the students go out to the Academic Skills instructors from the Director of the Educational Opportunity Program. Students making normal progress are checked off the program participant's list. Any student who is doing particularly well and any student who is lagging behind must be described by their instructors in some detail. Those who are stars will have letters sent to their parents indicating their achievement. Those who are in academic difficulty will be notified of appointments with the EOP counselors to work out their problems.

Conclusion

A prime factor in the students' success in the package program is the close, cooperative supervision by the Academic Skills Center and EOP faculty and staff. But not to be overlooked is the opportunity provided by the package classes for the development of affiliation among the members of the class. In contrast to the average student (and in particular to the average EOP student), who too frequently experiences a deep sense of loss of all that is familiar once he/she enters a larger university, the students in the package classes begin

to develop into a group, moving from class to class together, comparing notes and experiences. They develop academic relationships, which lessen the feelings of alienation. Small study groups begin to form around the better students. Ties of association and friendship grow from shared tasks. Under such conditions of affiliation within a group, people learn more rapidly and find a measure of joy in the academic experience. All this contributes toward retention of our underprepared and non-traditional students.

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